PAPER TRADE JOURNAL

Mill Men on Maintenance

•

New Groundwood-Chip System

•

Consolidated's Air Bleed Press

•

Plastic Pipe Case Histories

•

Spectacular Trim Handling

February 20, 1956

High note in EVAPORATING economy!

Get up to 6 pounds of vapor from 1 pound of steam with Swenson Septuple Effect Evaporators

Here's how to hit "high E" in evaporating economy! With seven Swenson Evaporator effects you boil off 5.7 to 6 pounds of vapor for every pound of steam that enters. You save fuel and steam plus condensing water as well, thus contributing to lower production costs per ton of pulp. If you presently use less than septuple evaporation, your existing evaporator equipment can be changed to septuple effect . . . with a gain in steam economy.

Get complete information on multi-stage evaporation economy. Write today for Bulletin E-100.

SWENSON EVAPORATOR COMPANY
15687 Lathrop Avenue, Harvey, Illinois

Multiple Effect Economy*

	QUINTUPLE	SEXTUPLE	SEPTUPLE
ONE POUND OF STEAM GIVES	3.7 to 3.9 pounds vapor	4.8 to 5 pounds vapor	5.7 to 6 pounds vapor

*Results will vary with feed and pressure conditions.

SWENSON

Proved Engineering for the Process Industries

SINCE 1889

A Division of WHITING Corporation

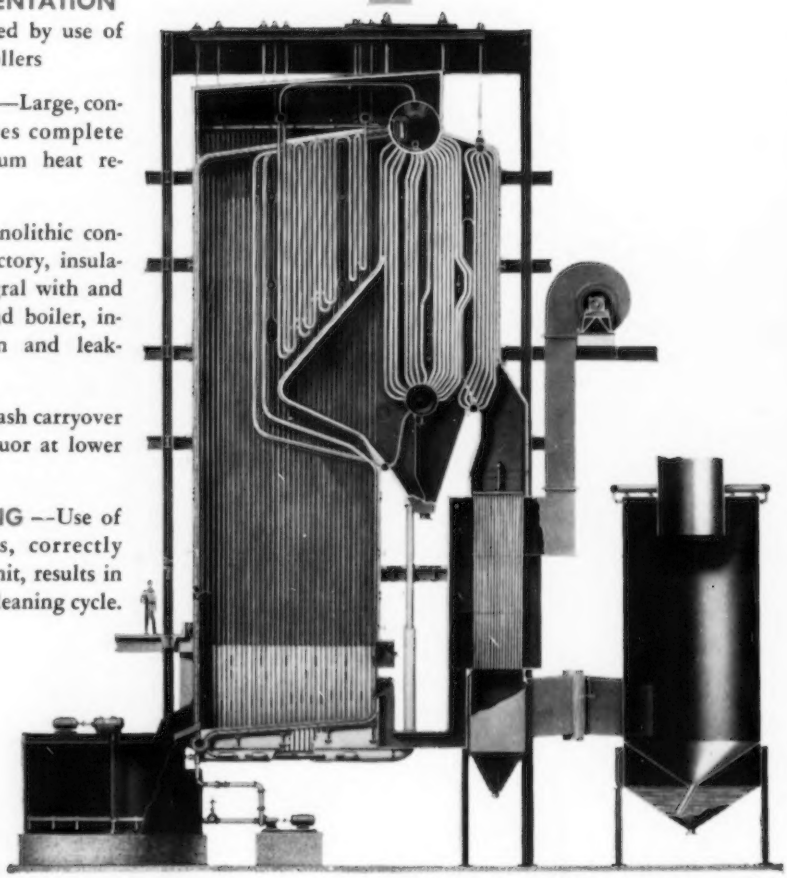
Pulp Washers • Evaporators
Filters • Digester Blow Condensers
Turpentine Condensers

Improved Design Features of B&W Recovery Unit assure . . .

MAXIMUM EFFICIENCY

in Chemical and Heat Recovery

- **COMPLETE INSTRUMENTATION** —Combustion is stabilized by use of automatic air-flow controllers
- **LOW FURNACE DUTY** —Large, conservative furnace assures complete combustion and maximum heat recovery
- **TIGHT SETTING** — Monolithic construction, in which refractory, insulation and casing are integral with and supported on furnace and boiler, insures uniform expansion and leakproof setting
- **CLEAN BOILER** —Low ash carryover is the result of firing liquor at lower per cent solids
- **NO ROUTINE LANCING** --Use of improved soot blowers, correctly located in the recovery unit, results in a thorough and efficient cleaning cycle.



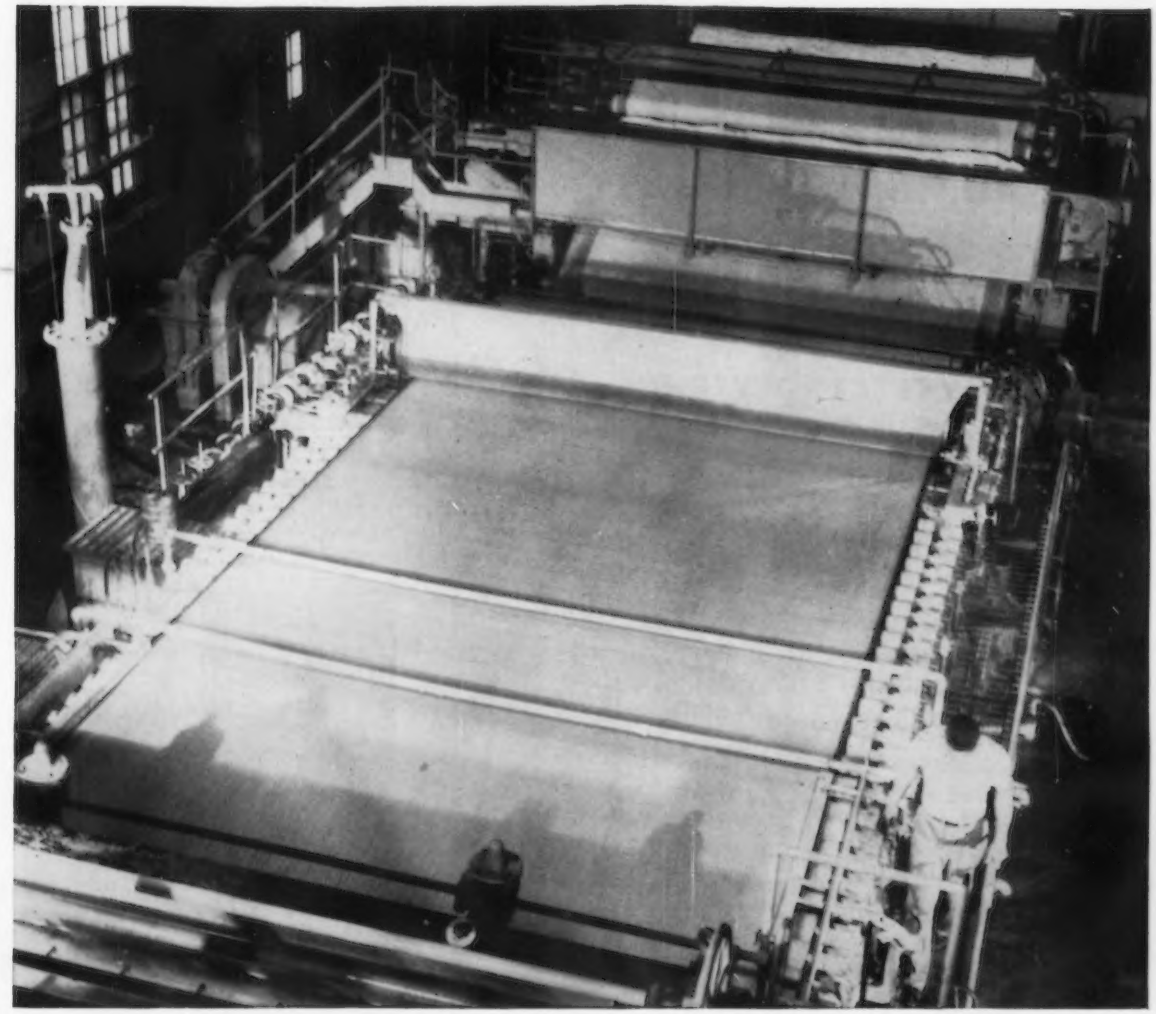
Typical modern B&W Two-Drum Recovery Unit equipped with B&W Cyclone Evaporator.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY
161 East 42nd Street
New York 17, N. Y.

P-780

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Fewer spots, better paper formation with B. F. Goodrich table rolls

You can get more even formation and fewer spots on the sheet if your Fourdrinier is equipped with B. F. Goodrich Dukbak table rolls. Water clings to the surface of ordinary rolls and is carried on around and thrown against the lower side of the wire. But with B. F. Goodrich table rolls this can't happen—water can't stick to the special rubber on Dukbak rolls—it is cast down and away from the wire.

And because Dukbak table rolls are ground straight and true, they move evenly with the wire without developing high or low spots. The wire is kept perfectly level. The sheet you produce is smooth and uniform.

Fast, uniform production is especially important in the making of fine paper. And the Hammermill Paper Company's 180″ Fourdrinier (shown above), equipped with Dukbak table rolls, is setting new standards for speed and quality.

In addition to better performance, B. F. Goodrich Dukbak rolls have many other cost-saving advantages. Corrosion is impossible because the ends are sealed against moisture, and after years of hard service, Dukbak rolls can be reground as good as new.

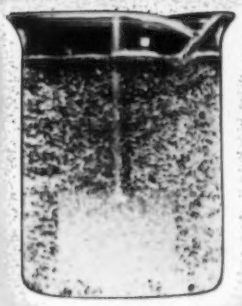
Let a B. F. Goodrich representative show you how these longer-lasting rolls can improve the quality of your paper. And if you are buying a new Fourdrinier, be sure to specify Dukbak to your machine builder. *The B. F. Goodrich Company, Dept. M-558, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

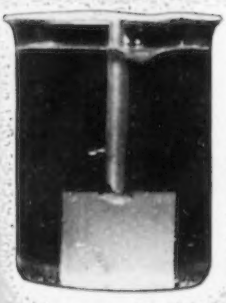
A New, Better Coagulant

NALCO 600

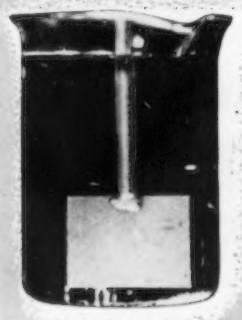
POLYELECTROLYTE



Alum



Alum plus typical polyelectrolyte



Alum plus Nalco 600

As a coagulant in water clarification, and under many process coagulation conditions, new and different Nalco 600 has shown such great promise, both in performance and economy characteristics, that it has now been made available for general use as an established member of the Nalco family of chemical aids to industry.

Extremely difficult coagulation conditions provide especially economical applications for Nalco 600. It can be used alone or in conjunction with other coagulants. A very low dosage of Nalco 600 usually permits as much as 50% reduction in dosage of alum, activated silica, iron sulfate or clay type treatments . . . and results in a cleaner, clearer supernatant liquid.

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JOHN C. W. EVANS
EDITOR

D. BRUCE OTIS, JR.
ASSOCIATE EDITOR

DAVID M. HUNTER
ASSOCIATE EDITOR

R. E. THUEMMES
MANAGING EDITOR

ERNEST F. BARKER
FIELD EDITOR

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REMEMBER THESE DATES

APR. 9-11: Annual Meeting of The National Paper Trade Assn., Waldorf-Astoria, New York, N. Y.

APR. 9-12: National Packaging Exposition and Conference, Convention Hall, Atlantic City, N. J.

MAY 7-9: Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

JUNE 12-14: National Meeting of Superintendents Assn., Lake Placid Club, Lake Placid, N. Y.

JULY 9-20: Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

PAPER TRADE
JOURNAL

Published Weekly Since 1872

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LOCKWOOD TRADE JOURNAL CO., INC., 15 W. Forty-Seventh St., N.Y. 36

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GEORGE E. LOCKWOOD, President and Treasurer
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PERFORMANCE VERIFIED / by acid test

Even before a Powell Corrosion Resistant Valve is made, it must pass the acid test. For quality control begins with the very materials which go into Powell Valves.

Constant laboratory control is one of the many ways we make certain that Powell Corrosion Resistant Valves will give dependable flow control. Another is the final step of manufacture: *every Powell Valve is subjected to an actual line test.*

To keep pace with the rapidly expanding chemical and process industries, Powell has designed many new types of Corrosion Resistant Valves. The variety of pure metals and special alloys in which they are available has grown to such an extent that today there is a Powell Corrosion Resistant Valve to control the flow of almost every known, corrosive fluid.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our COMPLETE *quality line* which has PERFORMANCE VERIFIED.

The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR

PERFORMANCE
PV
VERIFIED

FIG. 1503 SS (Sectional)—
150-Pound Alloy Steel Gate Valve.

FIG. 3065 SS (Sectional)—
300-Pound Bolted Cap
Alloy Steel Horizontal
Lift Check Valve.

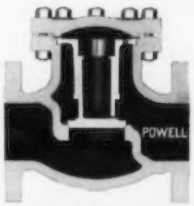
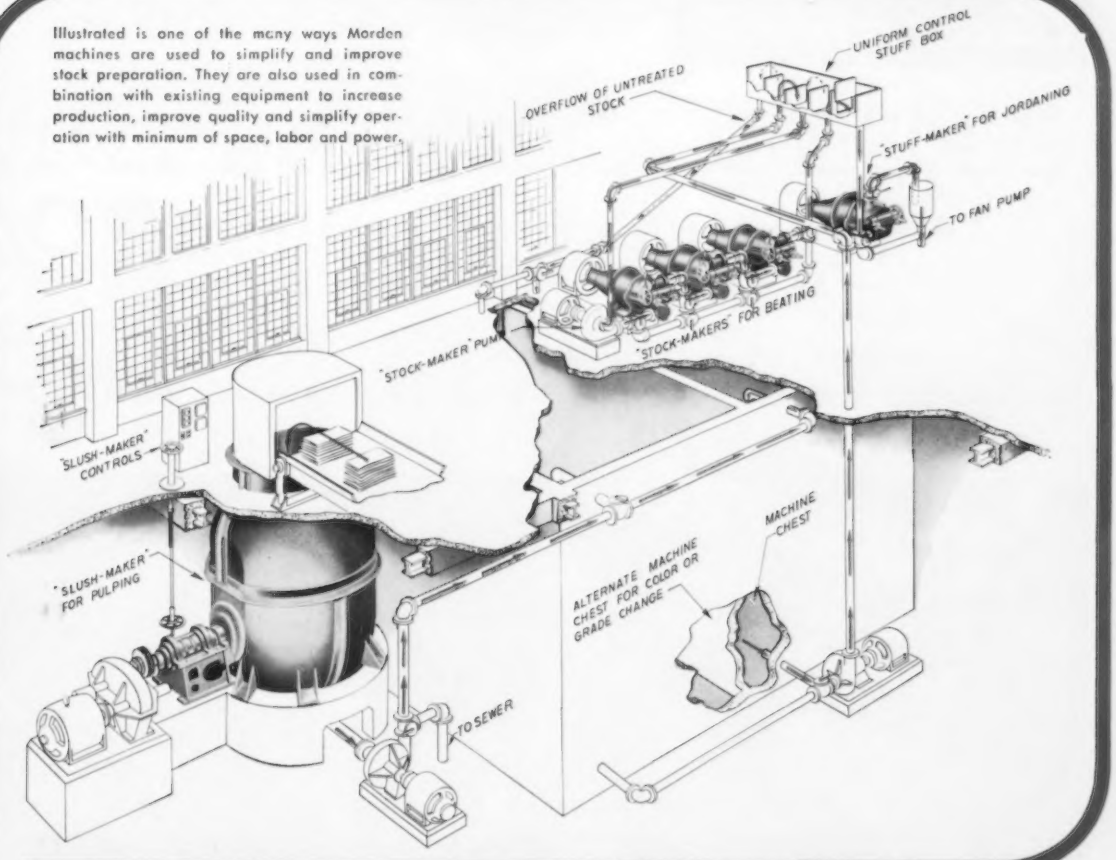


FIG. 1333 A (Sectional)—Integral Bonnet Angle Valve For Pressures of 1500 and 2500 W.S.P.

POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.

Illustrated is one of the many ways Morden machines are used to simplify and improve stock preparation. They are also used in combination with existing equipment to increase production, improve quality and simplify operation with minimum of space, labor and power.



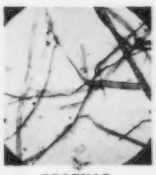
The MORDEN System of Stock Preparation

Morden offers three basic machines—each proven to excel in one of the three fundamentals of stock preparation—pulping, beating and jordaning. Each machine is precisely engineered, and permits full range of treatment on a continuous production line operation.

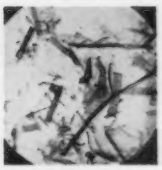
Morden's years of experience with hundreds of installations throughout the world can provide the "know-how" to assist mills in adapting existing systems or developing new systems of stock preparation to best serve individual requirements.

Ask Morden for more detailed information or assistance and how this equipment can be used advantageously in *your* mill.

PULPING
Separating one fiber from the other in preparation for treatment.



BEATING
Brushing or fibrillating, with emphasis on retention of fiber length for strength.



JORDANING
Shortening or cutting for formation and final control (if required).

To Mordenize . . . Use

MORDEN SLUSH-MAKER FOR PULPING
MORDEN STOCK-MAKER FOR BEATING
MORDEN STUFF-MAKER FOR JORDANING

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

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DAN B. CHAPMAN, Appleton, Wisconsin

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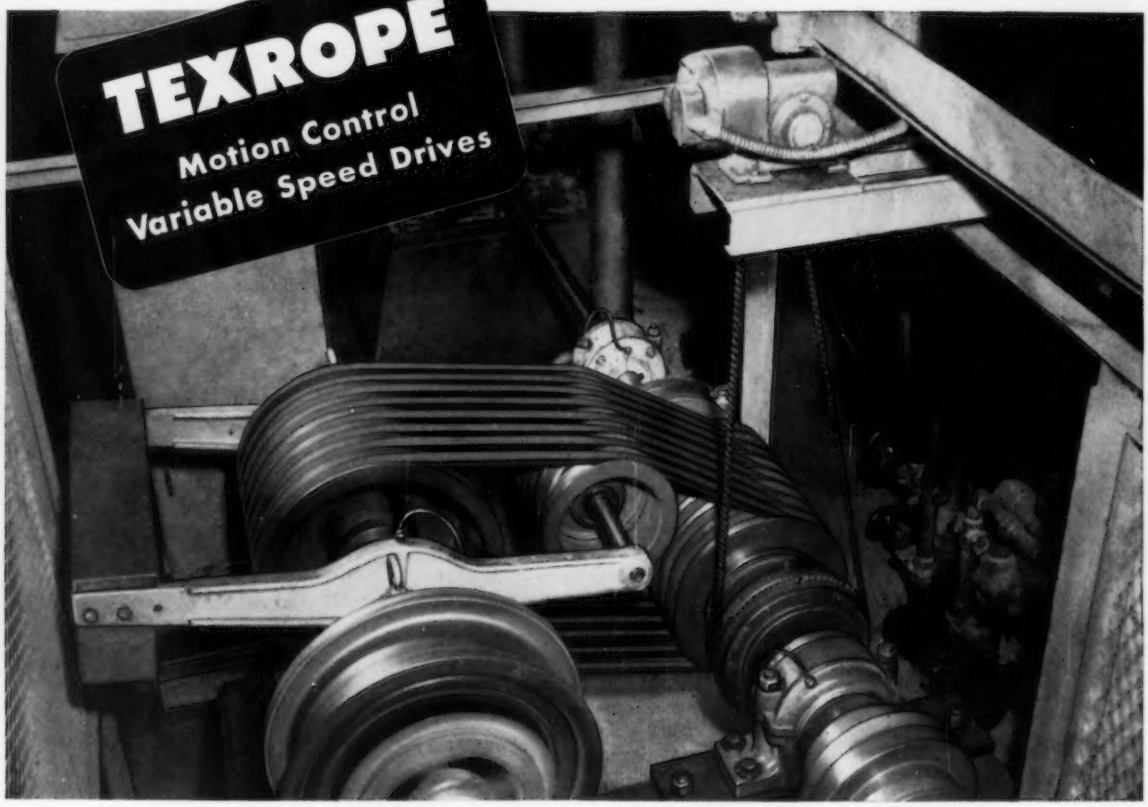
BRANDON SALES, INC., Greenville, S. C.

Other Representatives in Most Paper-making Countries

Users Report: **for paper machine sections**

SPEED DEVIATION CONTROLLED WITHIN 1%



NO high-cost special motors or elaborate electrical control are needed to synchronize sections of a paper machine.

Motion control integral-shaft *Vari-Pitch* drives are widely used in the paper industry. They provide the close control needed...and for a fraction of the cost of other methods.

Call your nearby Allis-Chalmers Distributor or A-C District Office for the complete facts. Or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

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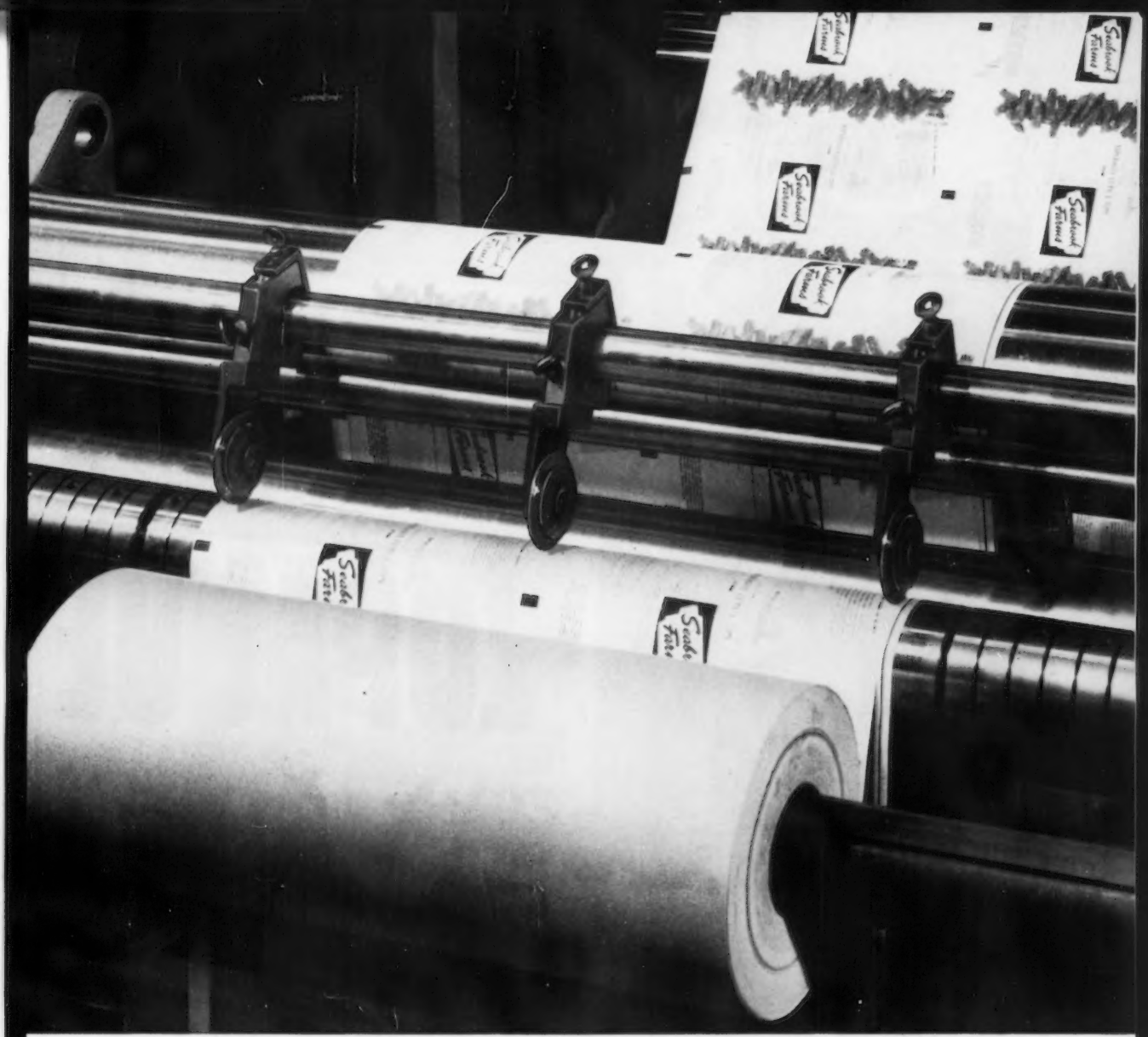


THE KIDDER C. W. SLITTER combines high speed with high accuracy; low rate of wear with low cost of maintenance.

From tissue to tags—it's tops

The Kidder C. W. Slitter has always been known as a versatile machine. It's one that takes all classes of work from carbonizing tissue to tag stock in perfect stride. Now it has been further improved with features suggested by many customers and operators as a result of a thorough Kidder survey.

High Production . . . designed for continuous duty, high speed production with a minimum amount of down time.

Shear Cutting . . . Kidder has always employed the shear-cut method for accurate work, long-life of the press and dust-free operation assuring positive roll separation.

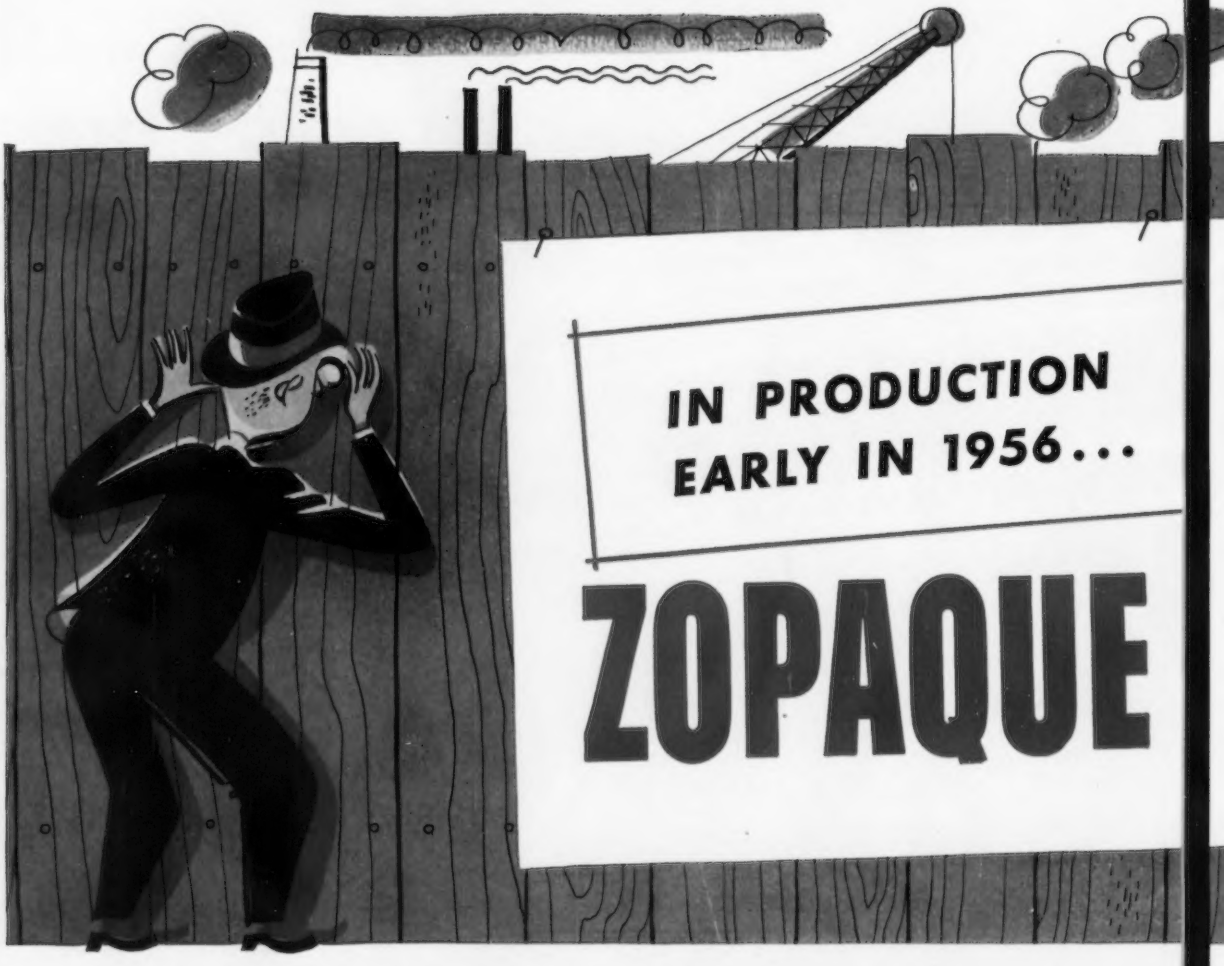
Low Maintenance . . . thanks to careful field studies of maintenance under actual operation at customers' plants.

For information on all Kidder Slitters and Winders, write to the Kidder Press Co., Dover, N. H.

Kidder

3 POINT SLITTERS

High Speed Operation
Dust-Free Cutting • Easy Roll Separation



First of 3 Big Expansions

TO GIVE YOU BETTER SERVICE WITH NEW ZOPAQUE, THE FINEST TITANIUM DIOXIDE

Glidden research has achieved greater whiteness and a highly accelerated dispersion rate in the new ZOPAQUE. These developments combine to produce pigments with exceptional hiding power, outstanding gloss and color retention, and low reactivity. Early in 1956, Glidden will open its new plant and double its production of ZOPAQUE. With this added production, Glidden will be in a better position than ever to serve your titanium dioxide needs.

Glidden ZOPAQUE Titanium Dioxide is available in both Rutile and Anatase grades. Rutile is recommended for the new types of paper coatings and Anatase is suitable for both coating and beater additions.

Write today for more details on Glidden ZOPAQUE, the finest titanium dioxide.

NEW GLIDDEN TITANIUM PLANT

Each Batch of Titanium Ore is Tested in Pilot Plant Before it is Processed!

You are looking at a giant titanium plant in miniature, as set up in the Glidden Laboratories in Baltimore. In this small-scale plant, jet-black titanium ore is transformed into gleaming white pigment through a hydrolysis process. This test provides an accurate check on every shipment of ore received by Glidden. It is part of the Glidden continuous quality control program to provide you with the finest ZOPAQUE Titanium Dioxide at all times.

THE GLIDDEN COMPANY

Chemicals — Pigments — Metals Division

Baltimore, Maryland • Cullinsville, Illinois • Hammond, Indiana • Scranton, Pa.

QUALITY Glidden PRODUCTS

Can she depend on you?

This lady is holding the bag...perhaps it is yours. Whoever is responsible for the adhesive job should investigate the properties of Globe dextrines.

Paper converters find Globe dextrines and gums provide an excellent bonding medium. The increased adhesiveness of the low-viscosity Globe dextrines is popular for bag manufacture, wherever a lardy, heavy paste is required. Other, more highly converted types of Globe dextrines and gums are extensively used for their more fluid, tacky paste.

Ask the man from Corn Products, he can help with product information and engineering assistance. Whatever your paper-making problem, he will be able to supply you with the technical assistance you require.

Globe® Dextrines and Gums

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17 Battery Place, New York 4, N. Y.

Corn Products has a complete line of starches for every use in the paper industry:
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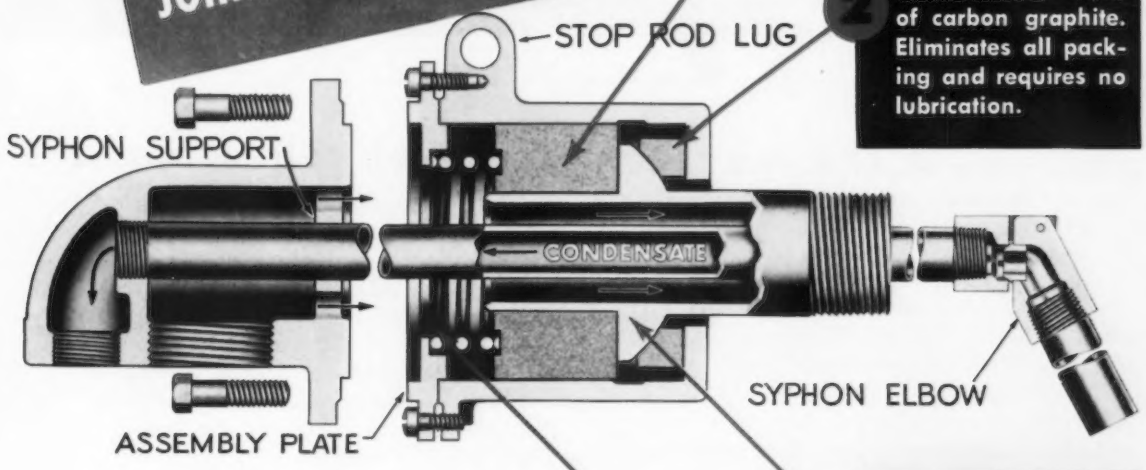
Only 4 INTERNAL PARTS!

TYPE SDP JOHNSON JOINT and JOHNSON SYPHON ELBOW



1 GUIDE—Makes the joint self-supporting. It is of self-lubricating, long-wearing carbon-graphite.

2 SEAL RING—Also of carbon graphite. Eliminates all packing and requires no lubrication.

3 NIPPLE—Rotates with the roll, and seals against the ring.

4 SPRING—Serves for initial seating only. In operation joint is pressure sealed.

Notice how straightforward and simple is the design of this Johnson Joint. This unmatched simplicity means fewer breeding places for trouble... simplifies overhaul and repair out in the field. At the same time the joint is completely packless, self-adjusting, self-lubricating and self-supporting.

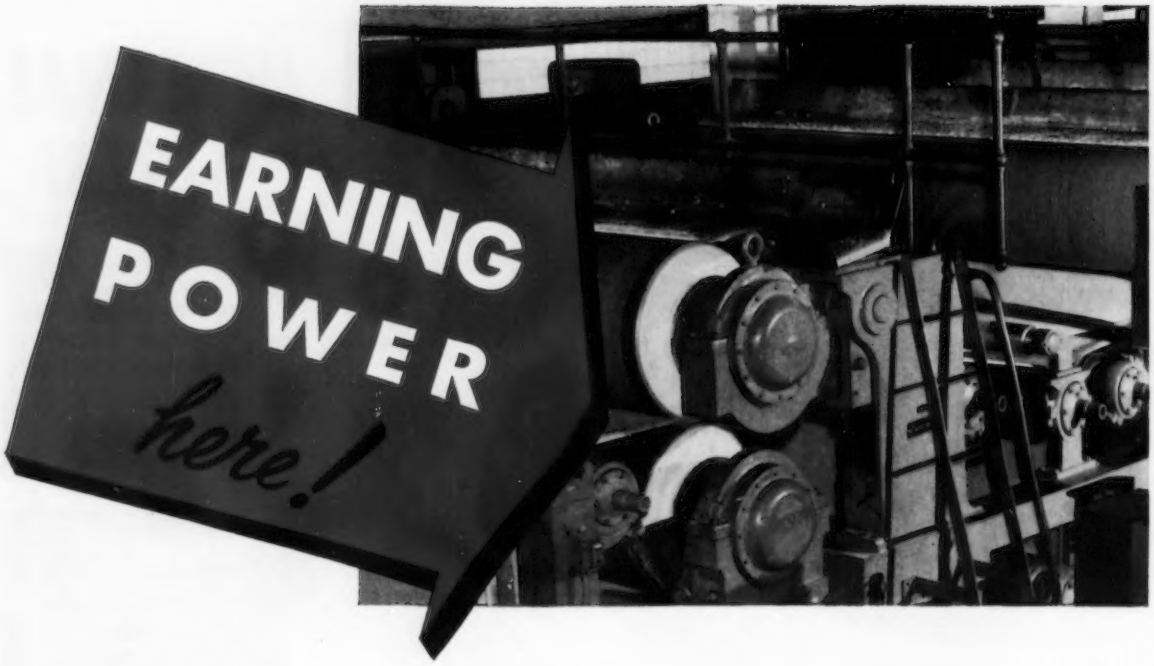
In this Type SDP the assembly plate holds the internal parts in position when head is removed. This makes it a perfect team-mate for the Johnson Syphon Elbow which can be inserted or withdrawn right through the joint.

Test it yourself—We'll gladly supply a pair of the units shown for 90 day trial right in your own mill; no obligation of course. Write for details and literature.

Products of The Johnson Corporation

828 WOOD ST., THREE RIVERS, MICH.

Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters



is the measure of rubber roll value...

The right rubber covered roll pays for itself so many times over in increased production that anything less than the right roll is exorbitantly expensive.

In the long run, the actual value of a rubber covered roll is measured in the production record of the machine in which it is installed . . . and on that basis, Stowe-Woodward rubber covered rolls are specified by America's leading papermakers.

Because of their dependability in production at high speeds, they have earned the name of

"RUBBER ROLLS with a REPUTATION"

S-W INC.

STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN • NEWTON 64, MASS. • GRIFFIN, GEORGIA

Maintenance Most Important

Because mill maintenance is a present day production expense most susceptible to substantial reduction, Paper Trade Journal will provide a concerted editorial effort on this problem. The first of 20 special articles on the subject, written by experts, appears elsewhere in this issue. The series is considered of particular importance at this time, because full production is continually producing heavier demands on all equipment, and allows little or no time out for repairs.

Just A Stretch Of The Legs

If you were to take all the paper produced in the U.S. last year and make it into a path one yard wide, you could take a walk that would stretch to the planet Mars and back—a distance of over 70 million miles—and still have enough left to get around the earth more than 800 times.

Salvage Rates Held Not Sufficient

At least 10 million tons of wastepaper will have to be salvaged in 1956 to meet industry's requirements, Joseph S. Miller, New Haven Board & Carton Co. president announced. The paper industry will use 1.75 million tons of high grade stock. A breakdown of paperboard demand includes 1.7 million tons of mixed grades; corrugated 2.5 million; newspapers 2 million; and high grades 1.0 million tons. Wet machine board mills will require 125,000 tons chiefly of bulky grades, and building materials mills will need 875,000 tons, Mr. Miller estimated.

Pulp Round-Up

Pulp producers have not yet been able to determine the total effect a seven per cent rail freight rate increase will have on second quarter shipments. All grades are currently moving extremely well, producers report. Unbleached krafts are now slightly more available, but not in Scandinavian or Eastern Canadian qualities. Bleached krafts are in short supply with little spot tonnage in evidence. Unbleached sulphite is well balanced, but bleached grades are listed as tight. Export shipments and demand are on the rise, with increased emphasis being placed on high alpha pulps.

Hardwood Groundwood From Chips

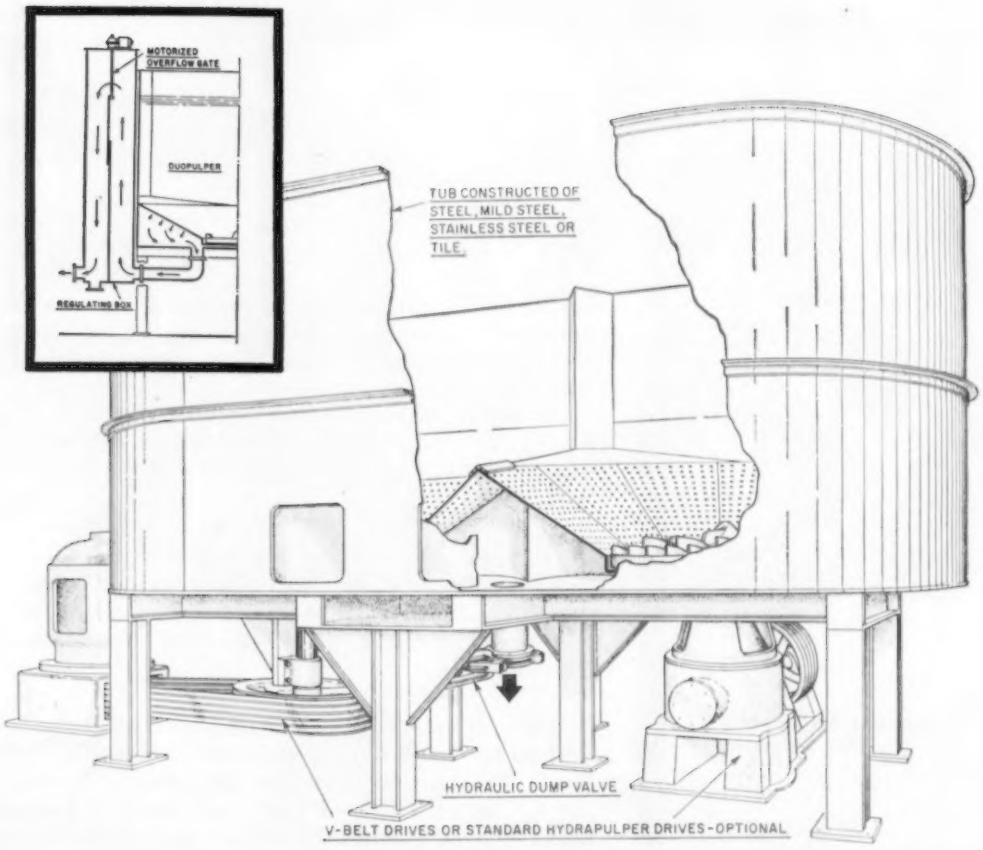
This week's issue contains an article of unusually significant interest. The story describes the manufacture of groundwood from hardwood chips. Its importance lies in that it (1) helps solve the problem of hardwood utilization, and (2) provides a much simplified process as compared to that of using bolts of wood.

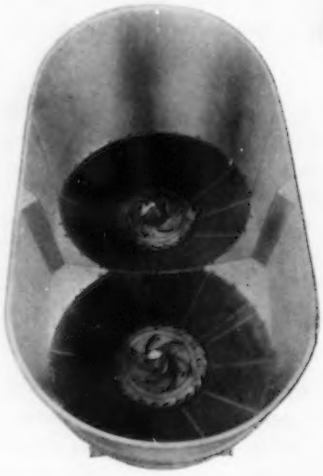
Design, Not Graphics Sells Retailers

Package design, not graphic arts sells a retailer on carrying or not carrying a product line, a large grocery chain executive told package makers at a recent design seminar in New York. "A five cent package of gum has a tear strip but a $5 case of merchandise does not", the retailer pointed out.

Plastic To Replace Paper Cups?

Dow Chemical Co. has developed a plastic disposable drinking cup, and now plans to enter markets long held by *paper cups.*


MOTORIZED OVERFLOW GATE
DUOPULPER
REGULATING BOX
TUB CONSTRUCTED OF STEEL, MILD STEEL, STAINLESS STEEL OR TILE.
HYDRAULIC DUMP VALVE
V-BELT DRIVES OR STANDARD HYDRAPULPER DRIVES-OPTIONAL



NEW CONCEPT IN BROKE PULPING

...Shartle DUOPULPER

Designed to take full sheet width broke right off the machine or broke conveyors.

Two Hydrapulper® rotors in one low oblong tub. Generous extraction plates around outer periphery of each rotor for high capacity.

Requires very little head room . . . will fit under most machines. Equipped with regulating box with motorized control gate for automatic operation.

Available in several sizes.
Write or call Shartle Division for more information.

The BLACK-CLAWSON Company

SHARTLE DIVISION • MIDDLETOWN, OHIO

WEEK OF PAPER TRADE JOURNAL FEBRUARY 20, 1956

Maybe $50 Million Mill in New Brunswick

Possible establishment of a $50 million pulp and paper mill in the province of New Brunswick was discussed last week by Canadian and United States industrialists at a meeting in Fredericton, N.B. Talk led to consideration of a site at Lepreau on the Bay of Fundy between St. John and St. George.

Michael Butler of New York and representatives from Great Lakes Carbon Corp., New York, were reported to have been among the group attending the discussion. They met with Premier Hugh J. Flemming and executives of the New Brunswick Electric Power Commission.

It was understood that more research into means of supplying the necessary power for the new mill would have to be undertaken before further plans could be made.

I.P. Talks Merger With Long-Bell Lumber

Merger negotiations are progressing between International Paper Co. and the Long-Bell Lumber Co., along with the parent firm, Long-Bell Lumber Corp. Discussions between the parties were confirmed last week in the *New York Times*.

J. D. Leland, president of the lumber company, is said to have reported that conversations with International Paper will continue but that no decision on the merger can be reached before early April. If accomplished, the union will give International its first timber holdings in the Pacific northwest.

The parent Long-Bell corporation owns more than half the common stock of the Long-Bell Lumber Co. of Missouri, which is the operating organization. At the end of 1954 the company owned nearly three billion feet of lumber in stands, 73 per cent of which is in Oregon and the remainder in California, Washington, and various southern states.

In addition to saw mills, sash plants, and wholesale building materials stores, Long-Bell operates a dry-process hardboard plant in Longview, Wash.

Swanee Nearer New Carbondale Mill

Purchase of a former Delaware & Hudson Railroad roundhouse at Carbondale, Pa., by Swanee Paper Corp., Ransom, Pa., has been made as the first step in a $15 million expansion program, which the firm announced last fall.

The property was transferred to the company by Harry and Mildred Pearlman, New York, who purchased it from the railroad in October, 1954, for $52,250. Mr. Pearlman is president of Swanee Corp.

At the time of purchase, it was stated that construction plans include the possibility of a semi-chemical pulp mill at the site along with a paper mill for manufacture of newsprint.

Gould Paper Will Experiment With Groundwood Pulp from Hardwood Chips

A pioneer plant for developing a hardwood groundwood pulp suitable for book papers will be installed this summer at Gould Paper Co., Lyons Falls, N. Y. The pilot plant is being erected in cooperation with Bauer Bros. Co., Springfield, Ohio.

Equipment for the plant will include special components developed by Bauer Bros. for the manufacture of groundwood from softwood chips. In extending the process to hardwoods, Gould will explore the substitution of this groundwood pulp, after bleaching, for kraft and spruce groundwood in book paper furnish.

Ed. Note: Complete details on the widened scope of groundwood from chips is contained in Lee Eberhardt's feature article in this issue.

Control of Doeskin Shifts To Swan-Finch Oil Corp.

Operating control of Doeskin Products Inc. has passed into the hands of Swan-Finch Oil Corp., according to a report by Robert F. Six, chairman of the board of Swan-Finch. He states that the New York City firm has become the owner of 200,000 shares of Doeskin's 470,000 common shares outstanding.

The Doeskin holdings include the subsidiaries: Sitrue Inc., Sterelik Inc., and Superfine Paper Mills Inc. The headquarters are in New York City. Five plants of the company are combined paper mills and converting plants in Rockland, Del.; Mount Tom (with sulphite pulp mill) and Wheelwright, Mass.; Clayville and Utica (idle), N.Y.

The Doeskin deal involved an exchange of two and a half shares of Swan-Finch for each share of Doeskin. It is the latest in a series of mergers whereby Swan-Finch, a petroleum products firm, has expanded into natural gas, uranium mining, grain storage, and now the manufacture and distribution of sanitary and toilet tissues.

Total Doeskin volume in 1955 is estimated at about $19 million.

Container Corp. Seeks Closer Mengel Link

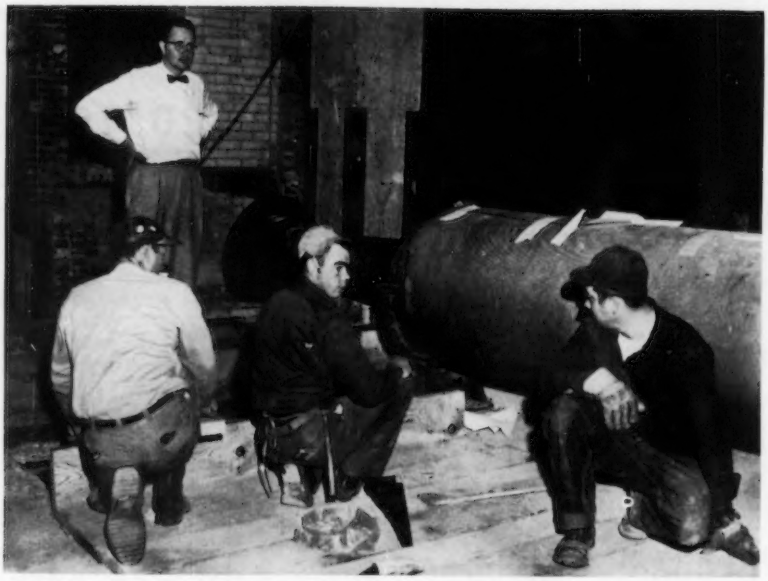
Seeking more firm control of Mengel Co., its corrugated box and furniture making affiliate, Container Corp. of America approved a plan for the exchange of its common stock for additional Mengel shares not now held by Container Corp.

The plan calls for the offer of one Container common share for each two shares of Mengel common stock. At the present time, Container holds about 65 percent of Mengel's outstanding common stock.

The offer will be conditioned on the acquisition by Container of enough Mengel shares in the exchange to bring its holdings of Mengel common stock to at least 90 percent but not less than 80 percent of the total outstanding.

Container will not make its offer until its common stock to be issued in the exchange has been registered with the Securities and Exchange Commission and other legal requirements have been met. Container officials expect the offering will take place "near the end of March."

Mengel Co. directors approved the exchange plan.



LINING UP THE COUCH—Tom Friedrich, technical director, oversees the job.

Beckett's Men Install New Machine

Expanding production at Beckett Paper Co. calls for the installation of a new fourdrinier. Work on the job is progressing steadily under the skilled hands of Beckett's own maintenance force.

Scheduled for start-up sometime this May the 143-inch machine will trim 128 inches and attain speeds up to 650 f.p.m. The Hamilton, Ohio, company plans to run the same grades now made on its number one and two machine. This means that the new machine will make weights ranging between 40 and 150 pounds, 25x38-500.

Work on the new machine room building 155′ x 40′ was started in October last year; and since the 155 foot length of the new building now extends into what previously was the supercalender area, the overall length of the new machine room will be 225 feet.

With the new structure the company also erected a new three story storage building with 42x52 foot floor space. The two supercalender stacks will be moved into this building as part of the machine installation project.

Work on the foundation for the machine has been completed and work on the machine frames and dryer installation has been started. The machine will be equipped with a Valley inlet headbox. 39 four foot diameter dryers (including seven felt dryers) comprise the first dryer section before the size tub and plans call for 10 four foot dryers after the size tub, according to M. L. Barker, consulting engineer and George Lydick, plant engineer. The machine will be equipped with one calender stack.

The company plans to install automatic pH control and a beta-ray basis weight gauge, according to general superintendent, Harold C. Leighton.

Beater Kills Worker—A Safety Reminder

A 50-year-old workman fell into a paper stock beater in the Jaite, Ohio, mill of National Container Corp., and was ground to pieces.

The victim, Henry Whetstone of Akron, had leaned into the beater to retrieve a piece of wire. He fell in and was carried under a six-ton roll and chopped by 76 cutting blades.

Fellow workmen heard him scream, but by the time they reached the scene he had been pulled under.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending February 4, 1956, was 100.5 percent, compared with 99.4 percent, revised, for the preceding week. The ratio was 96.1 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending February 4, 1956, was 101 percent, compared with 102 percent for the preceding week, and 94 percent for the corresponding week last year.

(Detailed statistics on page 62)

Glatfelter Awards Piping Contract to Nelson

Nelson Co., Holmes, Pa., has been awarding the piping contract by the P. H. Glatfelter Co., Spring Grove, Pa., in connection with its expansion program presently under way. The amount of the contract work is in excess of half a million dollars and includes stock, water and steam piping from the existing mill to the new building as well as the usual piping for the new paper making facilities, it is said.

This additional work follows the completion of all of the piping work for Glatfelter in its first stage of the pulp mill expansion program, which included an entire new bleach plant, chlorine dioxide generating unit, additional digesters and a complete new black liquor recovery boiler. The above piping involved the use of many types of metals and plastics in their construction, such as: stainless steel, hastelloy, chrome moly, carbon steel, plastic, glass, etc.

New F.P.L. Publications Of Interest

The following new publications have just been issued by the U. S. Forest Products Laboratory here and are available without cost on request to the Director.

"Bond and Magazine Book Papers and Milk-Carton Paperboard from Old-Growth Douglas-Fir and Red Alder Pulps," Report No. 2042, describes process conditions for the production of bleached and unbleached pulps and presents data to show that 1) bleached sulfate pulp of old-growth Douglas-fir can be made into a very good bond paper, 2) it can be mixed with red alder pulp and used for magazine book paper, and 5) it can be used to produce good milk-carton stock.

"Pulping Characteristics of Lake States and Northeastern Woods," Report No. 1675, presents comparative data on the properties of pulps and papers produced by all the known processes from both hardwoods and softwoods, with emphasis on the possibilities of increased utilization of hardwoods and the less-favored softwoods.

"Relationship Between Specific Gravity and Percentage of Summerwood in Wide-Ringed, Second-Growth Douglas-Fir," Report No. 2045, indicates that the density of both springwood and summerwood increases with increasing percentages of summerwood in the annual ring.

Copies of any of these reports may be obtained free of charge as long as the available supply lasts by writing to the Director, U. S. Forest Products Laboratory, Madison 5, Wis.

Watervliet Deposits Required Merger Shares

Action on the merger of Watervliet Paper Co. (Watervliet, Mich.) with Hammermill Paper Co. (Erie, Pa.) continues. It is reported that 128,000 shares of the 138,000 owned by Watervliet holders have been deposited with the First National Bank of Chicago, which is the exchange agent for the merger. This is well over the 80 per cent of the Watervliet shares required under the exchange agreement.

However, some time will be required to finish legal technicalities before Watervliet is actually merged into Hammermill as a subsidiary, Hammermill officials report. The agreement calls for the exchange of 26 shares of Hammermill for 25 shares of Watervliet.

Lydall & Foulds Plans Plant Additions

Lydall and Foulds, Manchester, Conn., has applied for permits to build two additions to its paper mill at a total estimated cost of $145,000.

Most of the floor space to be added will be used for warehousing and will make available for expansion space now used for storage.

The builder is Joseph Hublard. The two additions are a 75-by-12 foot building at an estimated cost of $38,000, and a 103-by-49 foot structure estimated at $107,000. Both are 1-story cinder block with brick veneer.

Munising Joins Sulphite Pulf Mfrs. League

Munising (Mich.) Paper Co. has become the sixteenth member of the Sulphite Pulp Manufacturers' League, a research group made up of paper mills in Wisconsin, Michigan and Minnesota. Stanton W. Mead, head of the industry group, said that election of Munising brings all Michigan sulphite production into participation with the research projects. The league was formed in 1939 to pool financial and scientific resources of member mills to find means of utilizing waste sulphite liquor and other by-products.

Riegel Raising $12 Million

Riegel Paper Corp. expects to raise about $12 million for expansion by selling 6 million of debentures, due 1981, along with a 194,155-share block of its common stock.

In a registration statement filed with the Securities and Exchange Commission, the company said it would send the common out for subscription by its stockholders in the ratio of one new share for each five held.

LUCKY TO BE ALIVE—Escaping what seemed certain death, Lonnie Heywood crawled from under this 300-ton avalanche of paper rolls with nothing worse than a bruised finger and a case of jitters. . . . Three co-workers had reported him dead after seeing the falling 25-foot stack of rolls engulf Heywood, who was riding the crane hook about 10 feet from the floor . . . The miracle occurred earlier this month in the warehouse of Mengel Co., Louisville, Ky.

I. P. Bids For Raleigh Plant Site

Preparing the way for a milk carton plant in Raleigh, N.C., International Paper Co. has placed a bid for about 11 acres of land on which to locate the plant. As of February 8, International remained the high bidder, at $3000 per acre, for the city-owned site.

International's bid is conditional upon the Raleigh council's allowing the Southern Railway to run a siding into the site. The paper company hopes to finish construction of a 35 million unit per year plant by the end of 1956.

Morris Consolidates Operation

On April 2, Morris Paper Mills will consolidate the manufacturing operation now located at the Imperial Division plant, 1740 N. 25th Ave., Melrose Park, with its manufacturing operations at Morris, Ill. Until such a time as additional facilities can be built in Morris, the Imperial Division plant will be used as a finished goods warehouse.

As of the same date, April 2, Morris Paper Mills has taken a long term lease on the entire 18th floor of 7 S. Dearborn St., Chicago 3, where it will consolidate the Executive and Sales Offices now located at 135 S. LaSalle St. and at 1740 N. 25th Ave., Melrose Park.

New Plant for Fort Smith

A new corrugated box is planned by the Arkansas Container Corp., to be located in Fort Smith, Ark.

John G. Kain and C. O. Cockrell, president and vice-president of the company, say the firm plans to buy a $500,000 corrugator and have it in operation by July or soon thereafter.

Messrs. Kain and Cockrell already operate box plants in Memphis and Chattanooga.

General Fibre Box Gets Permit for Addition

A permit for a $31,313 addition to General Fibre Box Co., West Springfield, Mass., has been issued by Building Inspector Raymond J. Sweeney. The two-story, five-room addition will contain manufacturing space, toilets and locker rooms. Architects are Alderman and MacNeish.

PAPER PEOPLE

S. H. Grimnes

E. A. Mahannah

Grimnes and Mahannah Join Engineering Firm

E. A. Mahannah and S. H. Grimnes, former paper mill engineers, have joined Ebasco Services Inc. as assistant project engineers assigned to the pulp and paper mill division of the company's Industrial Engineering Department.

Mr. Mahannah began his career in the pulp and paper industry in 1919 when he joined International Paper Co. He remained with the company until 1945 during which time he supervised design and construction of the company's Canadian and northern United States plants and worked as project engineer on many paper and newsprint mills. In 1945 he went with the Dexter Sulphite Pulp and Paper Co. as general engineer and in 1954 joined the St. Lawrence Paper Corp. as plant engineer, supervising all construction and maintenance.

Mr. Grimnes, a graduate of the Technical University of Trondheim, Norway, joined the research division of General Motors in Detroit in 1927 as a designer and research engineer. In 1937 he went with the Munising Paper Co. in northern Michigan as plant engineer and since 1947 has been chief engineer for the Pulp and Paper Division of the Diamond Match Co. Mr. Grimnes' experience includes the analyses of design and research problems; the maintenance and operation of sulphite and kraft paper mills; and the rebuilding and modernization, planning and erection of molded pulp plants, and new up-to-date paper machines.

Ed. Note: Mr. Grimnes is the author of the first in our series of maintenance articles, which appears in this issue.

Great Northern Retires Two Long-Time Foresters

Two woodlands employees of Great Northern Paper Co. go into retirement after completing 93 years combined service in the company's northern Maine timber holdings.

Robert Canders, a 50-year man, has in recent years been woodlands superintendent in charge of Great Northern's Little Squaw storehouse and the road maintenance and toting for the Pittston and Grant Farm operations.

Lloyd E. Houghton, a 43-year man, came with the company as a graduate forester from the University of Maine. He has worked as superintendent of operations in the St. John Pond country and with prisoners of war at Houlton during the war, and more recently as head scaler for the operations.

RECEIVES PLASTICS AWARD—John A. Owen, for many years associated with Sorg Paper Co., is the recipient of an award in appreciation of outstanding service to the Reinforced Plastics Industry. Mr. Owen, now a consultant, was given the award at the Plastics Society's 11th annual conference.

Sorg Reorganizes Sales Division

An expansion in sales and sales activities has dictated a reorganization of the sales division of Sorg Paper Co., Middletown, Ohio.

In the new sales set up, Charles J. Nicol will take over the handling of one division as sales manager for converter products.

Mel A. Dawson will head up the other division as sales manager for merchant products.

Other changes and appointments include: Dan T. Dineen, advertising and market research manager; John J. Fisher, sales representative for converter products in the Middletown office; Richard A. Broeren, sales representative for converter products in the Chicago territory.

Richard R. Wilhelm, sales representative for merchant products, Chicago; Harry A. Baumann Jr., sales representative for merchant products, New York; Rodger B. Cotter, sales representative for the New England territory; and Campbell P. Dennis, sales representative for merchant products in the southern Ohio, Indiana and Kentucky territory.

Stone Container Realigns Plant Management System

A realignment of responsibilities and authority for management of Stone Container Corporation's paper mill division has been reported in Chicago by Marvin N. Stone, executive vice-president. Under this new reorganization, Russell Mather will continue as general manager of the mill operation at Franklin, Ohio. J. R. Boykin will continue as general manager of the Mobile, Ala., paper mill and Bernard Bamer will continue as general manager of the mill at Coshocton, Ohio.

Under the new system, however, these general managers will report directly to Marvin N. Stone, executive vice president. Joseph J. Fiori, former vice president of mill operations for the company, is no longer associated with Stone Container Corporation as of Jan. 31, 1956.

Weyerhaeuser Names P. R. Man

C. Montgomery Johnson, former Seattle public relations man, has joined the Weyerhaeuser Timber Co.'s public information department in Tacoma, Wash. as Washington State public information representative.

For the past five years, Mr. Johnson has been public relations director of the Washington Education Assn. From 1948 to 1950 he was field director of the Keep Washington Green Assn.

Winchell Promoted by Scott

Horace F. Winchell, division manager in staff engineering of Scott Paper Co., Chester, Pa., has been named plant manager of a Canadian company affiliated with Scott, Westminster Paper Co., Ltd., in New Westminster, B. C. He has been on a special assignment at the Canadian paper mill since last September. His new capacity places him on leave of absence from Scott.

Mr. Winchell joined Scott in 1931. He was named chief engineer of the Chester plant in 1942. In 1947 he was sent to Harvard Graduate School of Business Administration where he attended a program in advanced management training. He has served as a division manager in Staff Engineering at Scott headquarters in Chester since 1952.

Named chief engineer at Westminster Paper Co. is Henry H. Derr formerly plant engineer at Scott's South Glens Falls plant. Derr joined Scott in 1939 and has served in a number of important engineering assignments.

Reynolds Made Chief Of Design for NEPCO

George E. Reynolds has been promoted to chief designer in the engineering department of Nekoosa-Edwards Paper Co., Port Edwards, Wis. Reynolds joined Nekoosa-Edwards in December of 1951. He had previously been with Valley Iron Works, Appleton, and Beloit Iron Works.

I. P. Promotes Masterman To Northern Division Post

Roscoe Masterman, general superintendent of the Otis Mill of International Paper Co., Chisholm, Maine, has been transferred to I. P.'s New York office where he assumes new duties as assistant to the manager of the Northern Division.

The Northern Division includes five International mills: Otis Mill at Chisholm and four in New York State, at Corinth, Ticonderoga, Niagara Falls, and North Tonawanda.

Ford Resources Foundation Elects Crossett President

Recently elected to the board of directors of Resources for the Future is P. F. Watzek, president of the Crossett Co., Crossett, Ark.

Resources for the Future is a nonprofit corporation for research and education in the development, conservation, and use of natural resources. It was established in 1952 with the cooperation of the Ford Foundation, and its work has from the beginning been supported by grants from that Foundation.

Mr. Watzek has been associated with the forestry program, and the paper, lumber, and wood chemical manufacturing activities of the Crossett Co. since 1938. He is an associate member of the Society of American Foresters and a past director of the National Association of Manufacturers.

Directors of Resources for the Future, in addition to Mr. Watzek are: Horace M. Albright, chairman, Edward J. Condon, Reuben G. Gustavson, Otto H. Liebers, Ernest B. MacNaughton, Leslie A. Miller, William S. Paley, Beardsley Ruml, and Stanley H. Ruttenberg.

Officers of the organization are Dr. Gustavson, president and executive director; Joseph L. Fisher, secretary and associate director; and John E. Herbert, treasurer.

Clubbs and Shaw in I. P. Engineering Shift

Bennett A. Clubbs, plant engineer at the Panama City, Fla. mill of International Paper Co.'s Southern Kraft Div., is moving to the company's Bastrop, La. mill. At Bastrop, he will serve in utilities, maintenance, and engineering.

Replacing Mr. Clubbs as plant engineer at Panama City is C. R. Shaw, who has been assistant plant engineer at that mill.

NEW AT HOWE SOUND—C. B. Davies has just been appointed plant manager of the Howe Sound Pulp Division of Canadian Forest Products Ltd., Port Mellon, B. C.

Warren Chilson Leaves Champion for Double Job

Warren A. Chilson has moved to Holyoke, Mass. and joined the staff of the Chemical Paper Mfg. Co. and the Crocker-McElwain Co. as manager of production. Mr. Chilson was formerly an assistant to the director of production for the Champion Paper & Fibre Co., Hamilton, Ohio.

His previous positions include: technical paper maker for the government laboratories in Madison, Wis.; director of development and adviser to the president of Great Northern Paper Co., and sales manager of the Curlator Corp.

At Chemical and Crocker-McElwain Mr. Chilson's duties are those previously performed by Clifford J. Yarber, who has been ill for several months.

In New Post at Eastern

Paul L. Pooler has been appointed to the newly created post of Supervisor of Finishing Operations at Eastern Corp., Bangor, Maine.

Mr. Pooler started with Eastern in 1922 in the Finishing Department. In 1927 he was promoted to foreman of the bindery in the advertising department, remaining until 1941, when he entered the armed forces. At the time of separation from the service in 1946, Mr. Pooler held the rank of Lt. Colonel. Returning to Eastern at that time, he became a member of the industrial engineering department, conducting time studies on the various jobs in the Finishing and Shipping Departments. During the past summer he was in charge of Eastern's Guest House activities.

Kniess Heads Technical Dept. of Consoweld

Max G. Kniess, Jr. has joined the technical department of Consoweld Corp., Wisconsin Rapids, Wis., as technical leader, J. G. Somers, general manager, announced recently. Consoweld Corp. is a converted products affiliate of Consolidated Water Power and Paper Co.

Reynolds Named Chief Design Engr. for Nekoosa

George E. Reynolds has been promoted to the position of chief design engineer in the engineering department of Nekoosa-Edwards Paper Co. In this position he will be in charge of designing all mechanical work.

Mr. Reynolds has been with Nekoosa-Edwards since December 1951. He previously held positions as mechanical engineer with Valley Iron Works, Appleton, and Beloit Iron Works, Beloit, Wis.

Two New Advisors on Western Mich. Committee

Two additions have been made to the advisory committee for the paper technology committee at Western Michigan College, according to Bert H. Cooper, vice president of the Kalamazoo Paper Co. and chairman of the committee.

A. L. Sherwood, vice president in charge of engineering at the Sutherland Paper Co., Kalamazoo, and L. D. Nicholson, president of the Michigan Paper Co., Plainwell, a division of the W. C. Hamilton Co., have accepted election.

Leaving the committee at this time is E. E. Ludwig, vice president, Bermingham and Prosser Co.

Consolidated Promotes Two

Roman A. Kirschling has been appointed to the new position of Purchasing Department buyer at Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. Ted A. Anderson succeeds Mr. Kirschling as Supervisor of Clerical Functions.

Times Publisher Made Spruce Falls Director

Arthur Ochs Sulzberger, of the publisher's staff of the *New York Times* has been elected a director of the Spruce Falls Power and Paper Company, Ltd. The newsprint mill operated by the Spruce Falls firm is in Kapuskasing, Que.

Oxford Forms New Technical Specialties Group

Oxford Paper Co. announces the formation of a new Technical Specialties Group, under the direction of Dr. William H. Hoge, within its Research and Development Department.

This Group, which includes D. R. MacKinnon and H. W. Buck, will devote their full time to product development and diversification.

The position of Group Leader for Fundamental Research, formerly held by Dr. Hoge, will be filled by Dr. Victor Mattson, who has recently joined the Oxford Research and Development Department.

Inland Container Promotes Thomas

Forrest R. Thomas, with Inland Container Corporation 15 years, has been promoted to manager of the Louisville, Ky. district sales office which was opened recently at 1581 Bardstown Road.

K-C's Brown, Forest Head

W. J. Brown, of Kimberly-Clark Corp., Neenah, Wis., has been reappointed for 1956 as chairman of Wisconsin Forest Industries, which sponsors the state Keep America Green program and American Tree Farm system of private woodland management.

Dixie Cup Makes Two V.P.'s

Craig Moore, sales director of the commercial products division, and Edgar Winne, director of the purchases for all Dixie Cups procurement, are newly-elected vice-presidents of the Easton, Pa. firm.

Consolidated Promotes Murtfeldt and Natwick

L. W. Murtfeldt has been appointed assistant mill manager of the Wisconsin Rapids Division, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

Mr. Murtfeldt, a graduate of Washington University, School of Engineering, St. Louis, Mo., has been associated with Consolidated in woods operations and in other capacities for 23 years. He has been at the head of pulp manufacture since 1942 and will be succeeded as pulp superintendent by John F. Natwick.

Mr. Natwick, a graduate of the University of Wisconsin, has been with the company for the past 21 years, occupying the position of bleach plant superintendent since 1943.

Shane Replaces Nolan As Sorg Superintendent

Robert Shane, formerly tour boss of the Oglesby Division of Sorg Paper Co. (Middletown, Ohio) has been promoted to superintendent. Mr. Shane takes over the job held formerly by John F. Nolan, who recently resigned to accept a position with W. C. Hamilton & Sons, Inc., Miquon, Pa.

Warner Named Woods Mgr.

John D. Warner has been appointed to the newly created position of woods manager for the Trenton, Ont. mill of Hinde & Dauch Paper Co. of Canada, Ltd.

New Salesmen for Western Waxed Paper

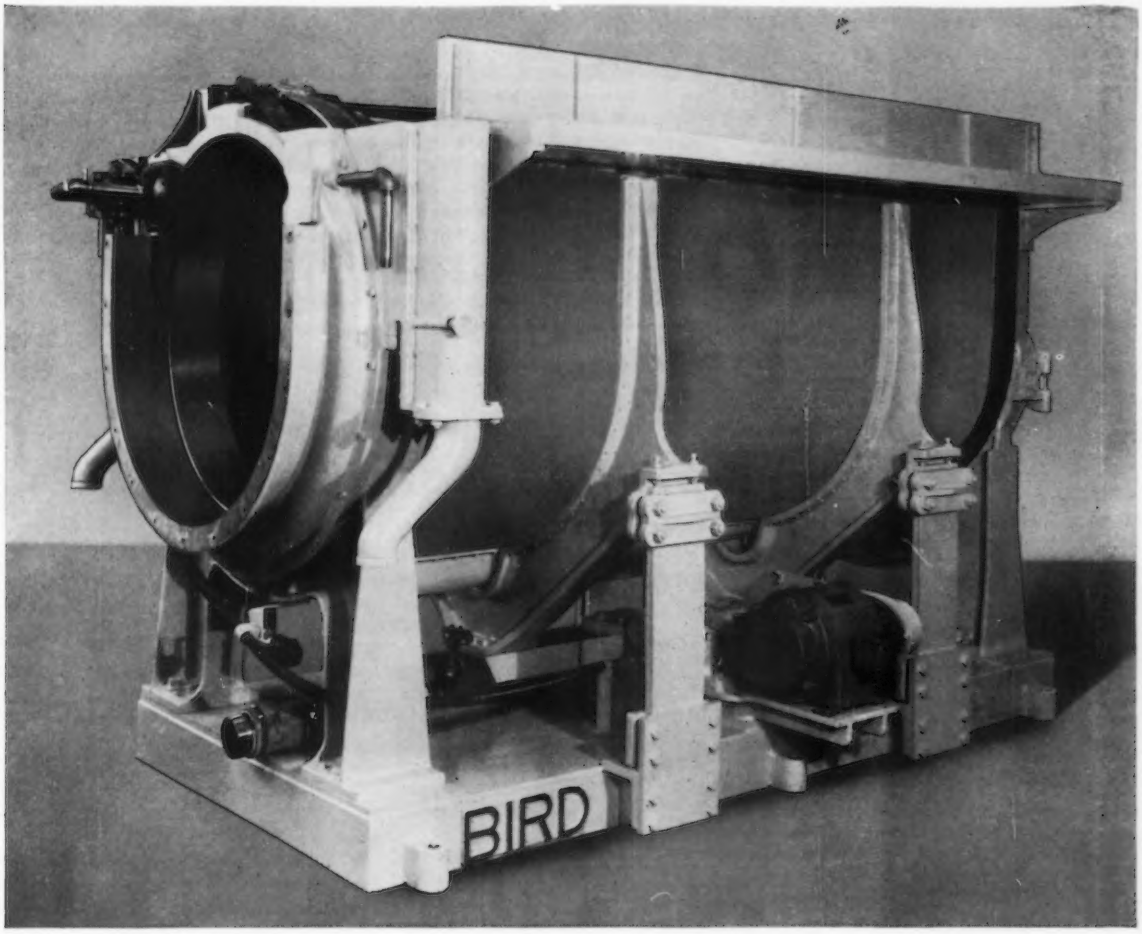
Frank Guerena has joined Western Waxed Paper division, Crown Zellerbach Corp., San Leandro as a sales representative.

Retires After 31 Years

A paper loader in the shipping department of West Virginia Pulp & Paper Co., Tyrone, Pa. for the past 31 years, John R. Zimmers, retired officially February 2.

Mr. Zimmers was guest of honor at a banquet January 13.

GENERAL FRANK L. HOWLEY, Vice-Chancellor of New York University, who will address The Assn. of Pulp Consumers at their Annual Reception and Luncheon at the Waldorf on February 22.



Best Friend Your Paper Machine Has!

Here's what Bird Screens do for paper machines to help them turn out uniformly high quality paper at maximum capacity:

- They take out dirt and foreign matter differing in size from the fibres and feed the paper machine clean stock that is uniform in weight, free of lumps, strings and slime.
- They comb out and individualize the fibres just before they go onto the paper machine, thus assuring good sheet formation.
- They protect delicate machine wires from damage by dirt and grit.

Regardless of what other dirt removal methods and equipment you employ, you need modern Bird Screens for the final assurance that your paper machine will always do its best.

BIRD
MACHINE COMPANY
South Walpole
Massachusetts

REGIONAL OFFICES: EVANSTON, ILLINOIS • PORTLAND, OREGON • DECATUR (Atlanta), GEORGIA

Excellent Selection

I have your proposed series of articles. Your selection of subjects is excellent, as far as they go. Of course the list could be expanded almost indefinitely, but this is dependent on your intentions and plans. I presume each article is to be complete. It occurred to me that one article is insufficient to cover such a broad field as each of these titles unless it is pointed specifically toward a particular phase. The article under this concept is bound to be only a repetition of many like articles in the past, and therefore would lack impact except to "first time" readers.

May I mention that I have seen very little, if any, basic practical operating procedures and tips for the neophyte, (and, incidentally, for the accomplished papermaker) I recall when I first entered the trade, I could find nothing practical for the beginner.

George M. Wagner
U. S. Gypsum Co.

Previous Articles Too General

I believe that your proposal on a series of articles on the maintenance of various departments of pulp and paper mills would be very helpful. The only suggestion I feel I can make is that most of the articles in the past have been very general, since most of these processes have more than one way to produce a certain product. For example, in the woodroom there are several ways of removing bark involving different types of equipment, the same goes for the groundwood mill; in the semichemical mill, there are stationary as well as rotary digesters, several methods of refining, plus the newer techniques of continuous pulping and refining. In the paper mill, especially the Fourdrinier, there are the common multi-drying systems as well as the Yankee dryer. In the past, too many papers have limited themselves to only one method in a department where there were several that should have been reviewed so that more people would obtain information from the article printed.

C. R. Faulkender
Technical Director
Charmin Paper Mills Inc.

Broad Coverage

The basic idea and subjects proposed should be of great interest since maintenance is certainly a key part of our industry and can often mean the difference between success and failure. I would hope that you would make the series as broad as possible. For example, under paper mill, it would seem that the value of the series would be increased by covering such equipment as beaters, refiners, screens, etc., as well as auxiliary equipment.

Walter F. Parker, Jr.
Technical Director
Dunn Paper Co.

Looks Very Interesting

Your outline for your series of articles on pulp mill maintenance looks very interesting to me. I do not believe any changes are necessary.

I do agree with you that power plant maintenance has been well covered by other magazines.

B. W. Haskell
Rayonier Incorporated

Introducing Paper Trade JOURNAL's New Series

Maintenance is the one item in the operating costs of most mills which still has a potential for a large reduction. This is the reason for the great interest shown in this subject by all mill men. The editors of Paper Trade Journal with the help of their Research Panel and by correspondence with several hundred key men in our mills have drawn up plans for an extensive series of articles. As originally planned we had intended seven articles on the subject but our advisers in the mills kept calling for more Separate articles on each phase of this subject. Our plans now call for the following twenty articles and the list will probably be added to before the series is over.

Here are the subjects to be covered.

How to Organize a Better

S. H. Grimnes

The author was chief engineer of Diamond Match Co. when he wrote this article. He is now with Ebasco Services Inc., New York.

With the rapid growth of our industry, and the introduction of new paper machines and other modern equipment, many of our mills are beginning to realize serious faults with their maintenance departments. We have failed to provide enough capable leadership with education and knowledge along the lines of modern eigineering, but probably far more important we have allowed our maintenance organization to become hopelessly old fashioned.

The remedy for this situation resolves itself into the planning of a revised, improved control system that disrupts the old setup as little as possible, and an educational effort to bring the changes across with the least resentment by personnel.

The success of the new system requires the full understanding, approval and cooperation of management, effective teamwork by all concerned and a serious determination to execute the procedures decided upon.

In the following we will outline a simple, workable and tried system which at a relatively small cost can be adapted to any mill large or small. You may introduce the system by employing one of the consulting firms specializing in this kind of work, or you can work it out for yourself if you have the right man available to head up the reorganization. It will take a little longer and you must be determined to give him the full authority and cooperation needed, but you can get a setup tailored to yuor particular needs and will develop a control department that knows the system from the ground up.

Get a clear picture of what you want and strive for the simplest possible way to reach your goal, be patient, keep your feet on the ground and stick it out.

Introduction

Maintenance control is essentially an accounting system where manhours and materials required for work to be done are balanced against money available. In reality it goes far beyond this. It strives for the most economical utilization of time, effort and money, by having jobs evaluated so as to employ the right man at the right time on the job for which he is best suited and qualified, by having materials and tools ready and at hand and work procedures outlined so that the required crafts may enter the job with a minimum of delay, and by having the man no longer needed on the job placed as soon as conveniently possible onto his next assignment.

Because a certain amount of emergency work will be encountered, the system must necessarily be flexible, but experience has shown that time spent on

On Maintenance

1—General Introduction—Organizing Maintenance
2—Preventative or Anti Breakdown Maintenance
3—Rule of the Consultant
4—Woodyard and Woodroom—Pacific Coast
5—Woodyard and Woodroom—Small Wood
6—Groundwood Pulp Mill
7—Kraft Pulp Mill
8—Sulphite Pulp Mill
9—Semi-chemical Pulp Mill
10—Bleaching Plants
11—Stock Preparation Equipment
12—Fourdrinier Machine Room
13—Cylinder Machine Room
14—Finishing Room
15—Power Plants
16—Instruments
17—Lubrication
18—Platform and Fork Trucks
19—Maintenance Welding Rules
20—Power Transformers

Maintenance Department

analyzing jobs where possible will pay off handsomely in speeding up the emergency work of the department.

The operation of the department in the new setup is shared by two closely-knit groups. The control and accounting section handles the planning and bookwork, and the supervisory section takes care of the estimating, the supervision and the execution of the work. Each section reports as a rule directly to the plant or maintenance engineer.

Planning

Small service jobs of routine nature, and inspection work for which a certain time will be allotted as well as emergency work where cost of repairs is secondary to loss of production, are performed with no manhour estimate. All other jobs shall be estimated for craft manhours needed and materials required, based on a procedure analysis. Where the procedures call for special arrangements and preparatory work or where more than one craft are involved, schedules will be arranged accordingly.

Simple Craft Manhour Estimates

In the form shown in Figure 1 we have an example of the manhour estimate for a small job needing only one line. Same form may also be used for larger jobs, which must be broken down in various phases, such as preliminary work, excavation, foundation work, steelwork, erection, machinery installation, etc. For breakdowns requiring more than two lines a separate sheet should be used for each job.

On the job above "Repair Blow Valve" it is estimated that:

Two pipefitters will need 1 hour to disconnect valve 1, welder will need 2 hours to prepare and build up seat 1, machinist will need 2 hours to face seat 2, pipefitters will need 1 hour to reinstall valve.

The plus and minus errors in the estimate will most certainly balance out as the estimator gains experience. By analyzing all jobs in this manner you can make a summary of how much work is ahead for each craft, and you can schedule the jobs as to priority and manhours available. Knowing what is ahead, you can fairly well judge if you are catching up or falling behind and need to apply overtime. It also makes it easier to get the right craft on the job at the right time.

A list or lists of materials are made up, as well as a list of special tools and equipment required.

Control

All jobs except those of a routine nature require a written "Request for Repairs" (RFR) to be sent or telephoned if necessary to the Control office.

Expediting and processing of the RFR's are in the hands of the controller, who checks that they are properly filled in and signed, issues RFR number and

FIGURE 1

Description	Craft - Manhours				Date	Equip. #	Job #
	P	W	M	P			
Repair Blow Valve	2-1	1-2	1-2	2-1	12.6.54	12-64	1207

Utmost Importance

Unfortunately, I am not able to suggest any one to prepare something on this subject. I am sure that it would be a very worthwhile project and I can assure you that maintenance in particular as it relates to stock preparation equipment and cylinder machine operation is of utmost importance to our industry.

I wish that we could comply with your request and I sincerely hope that you will locate some one who will be able to prepare this article for your publication.

W. H. Caddoo
Vice President
Robert Gair Co., Inc.

Very Interested

We are very interested in the articles you plan to publish in the *Paper Trade* JOURNAL, concerning maintenance in the paper industry.

C. Harold Carter
Assistant Master Mechanic
Union Bag & Paper Corp.

Wonderful Idea

With regards to your letter of October 16th. I think this is a wonderful idea and am looking forward to reading the articles. I would like to suggest the additional subject of wood yard conveyors.

Hal Standley
National Gypsum Company

Suggests Power Plant Article

I have your letter of September 16 describing a proposed series of articles on maintenance.

While I have no suggestions to make as to possible authors, I do feel that this is a very worthwhile series. I might suggest that an article on Power Plant Maintenance might be of interest to a great many paper mill engineers.

J. H. Tate
Howard Paper Mills, Inc.

Lubrication Article

Your outline of the series of articles you are planning on pulp and paper mill maintenance is very interesting and should be quite informative. However, in looking over your schedule of articles I would include a subtopic for lubrication in the "General Introduction" as well as elaborating on it. It is definitely a separate section of any maintenance organization and is probably the first step taken, either consciously or unsciously, in preventative maintenance.

P. W. Sarle
Plant Engineer
Oxford Paper Co.

Very Beneficial

I think articles on maintenance relative to different subjects will be very beneficial to those in the specific type mill. Also, I think the other articles will be helpful. Naturally I appreciate the invitation to participate in preparing one of these subjects but do not believe I am close enough to either to do a creditable job.

C. N. Rogers
Head General Engineering Dept.
Sonoco Products Co.

enters in log book. One copy of the RFR goes to the maintenance supervisor who analyzes the job as to procedures and crafts involved, and requests sketches or drawings from the engineering department if needed. Each craft foreman after inspection of the job makes a manhour estimate, and furnishes material and tool lists.

With above information at hand the controller OK's job or gets it OK'd if, for cost reasons or by nature, it requires special attention. The RFR is now a work order. The controller arranges for materials to be ordered and records manhours required from the various crafts. After the material has been received, the job is scheduled for work based on priority and manhours available, and is ready to go on the "Active" list.

Cost Data

With the RFR to give proper charge information and the time tickets to specify the work done by each worker and his time on each job, we have a record of every man's regular hours and overtime, as well as the labor cost in manhours for each job. Actual labor and material costs obtained from the controller's accounting division give us the total cost of each job, and this figure gives us a dependable picture of repair costs for the individual operating departments.

Maintenance superintendent, craft foremen, controller, maintenance accountant and clerk should if at all possible have adjoining offices, for easy accessability to the various records and files, and to prevent the duplication of forms and records.

Job Classification and "RFR"s

Each mill will have its own rules for classification of jobs according to cost, for job approval procedures and for authorization to issue "RFR"s.

Budget jobs are handled as other big jobs, except that cost estimates and material lists and ordering of materials may be in the hands of the Engineering Department.

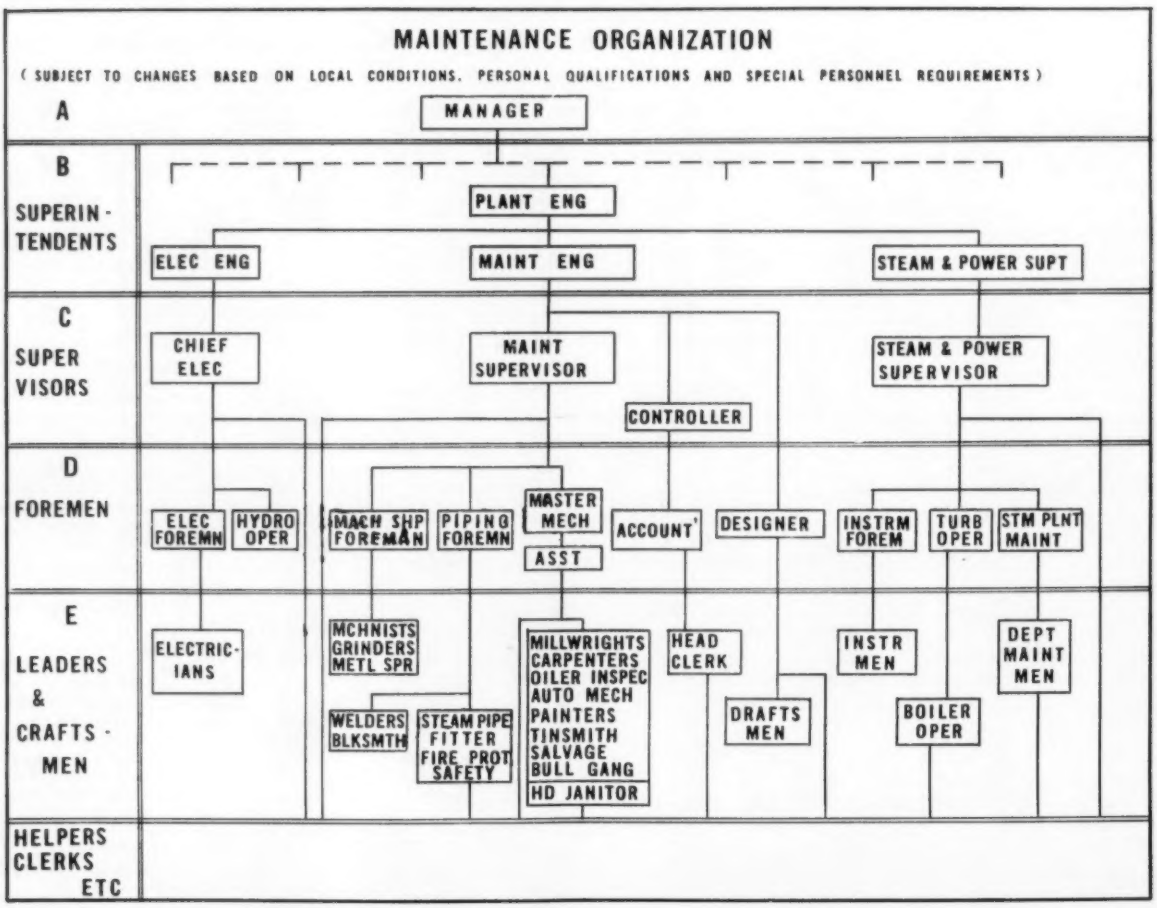
Emergency jobs caused by breakdowns and needing immediate attention to keep the shutdown time to a minimum in any production department are followed up with written orders as soon as possible after jobs are started. It will be found that most jobs can be scheduled, while a few can be only partly scheduled. Even emergency jobs can as a rule be subjected to a certain amount of planning after the initial work has started.

Since there are a certain type of jobs that can not be scheduled a given percentage of manhours available must be set aside for such job, it is to be expected, however, that a well planned and organized inspection service will cut this unscheduled time down. A good portion of the previous emergency jobs can be detected before they are too serious so as to get them included in the regularly scheduled shutdown jobs.

A.B. Maintenance

A conscientious and well organized inspection service is the most effective weapon against breakdowns, since it quite often detects faults that can be taken care of before the situation becomes critical. The work resulting from inspection is called "A.B. maintenance" (anti-breakdown) rather than "preventive maintenance" since the latter term leads quite a few to believe that we with this service should never run into any such a thing as a breakdown. We do not expect to eliminate breakdowns altogether, we do however want to keep them down to a minimum.

The inspection service should in most cases be combined with the oiling service, and should be performed by com-



petent, dependable mechanics, used to detect irregularities in the operation of machinery. The service should be on a regular schedule basis with checkoff sheets. Small jobs and minor adjustments taking up to about five minutes should be done by the Inspector-oiler on his rounds. Larger jobs should be reported, immediately if necessary, otherwise by report on the checkoff sheet. You might want to use your inspectors on alternate routes since one man will often detect what another has missed. The inspectors should work closely with the operators in the various departments and should check operators reports on irregularities before each round. It is of importance that reports are heeded and looked into, otherwise operators will lose interest in reporting.

Trouble spots should be given special attention and should be reported to plant engineer or engineering department for special study, if ordinary measures fail to remedy the situation. Steam and pipe departments should have inspection service on all lines in the mill, and leaks in valves and piping should be reported and fixed as soon as possible.

Setup of A.B. Maintenance

As mentioned above, the A.B. maintenance is primarily based on reports from a good inspector-oiler service. The first step is therefore to analyze your lubrication needs, list all points of lubrication in each department or section, types of greases and oils to use, recommended frequency of lubrication etc. A complete and detailed lubrication diagram should be drawn up for each area, similar to the charts used in garages for different makes of cars. From these diagrams the oilers route should be established, on a daily, weekly, or periodic basis, with a checkoff sheet for each area. The checkoff sheets should be made detailed enough so as to be sure that no points or lubrication are missed.

The lubrication sheet should also have checkoff squares where OK can be marked with a checkmark and irregularities can be marked with code numbers. Notes referring to the numbers can be made on the backside of the sheet. For instance: 1—Bearing loose and leaking oil; 2—Gear Reducer seems hotter than usual; 3—Shaft wobbly, coupling noisy.

Before going further we should note that it may often be necessary to do a house cleaning job and make provisions for reaching points that you know nobody will go near because they have to climb over machinery and thru passages where everything is dirty, with water dripping and sometimes steam leaking.

The next step is to determine the time required for the various trips and the combination of routes, with adjustments for changes from time to time. The periodic trips take in oilchanges, flushouts, special lubrication conditions etc., and are called for on a tickler system.

After picking the best men suited for the job, you are now ready to start scheduling the inspection-oiler trips, and as the reports come in and the weak spots are pointed out, investigated and taken care of with work orders, you are in the A.B. maintenance business.

Maintenance Meetings

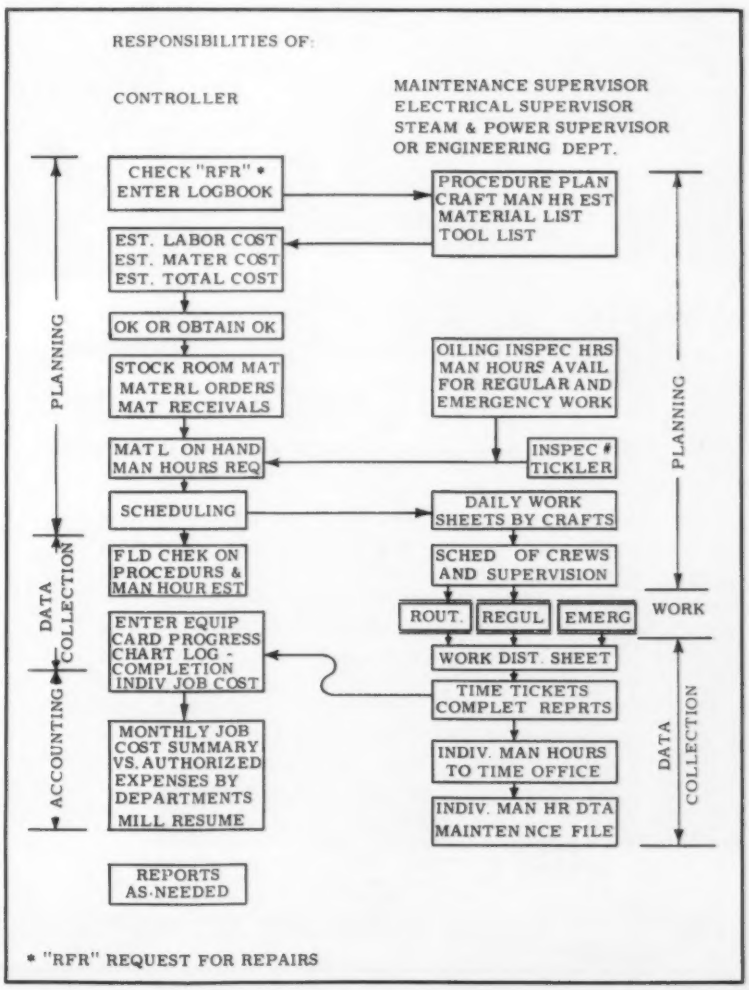
Maintenance meetings for discussion of Sunday work should be held not later than Wednesday afternoon, and each department head or foreman should present his RFR's at this meeting or earlier, if convenient. Any serious condition that develops before Sunday should be reported, accompanied with an RFR. Such jobs must of course be taken care of but should be kept to a minimum.

The reason for this early maintenance meeting is obvious. A good portion of the work, and all preparatory work as well as procurement of materials and tools can more easily be taken care of. It gives more time for inspection of the jobs and the scheduling of the men, the jobs can be analyzed for crafts involved, and there is a better chance of minimizing unreasonable hours of overtime Sunday night.

Organization Chart

In order to know whom to contact on orders and decisions and in order that the worker know who he is working for, it is necessary to have an organization chart; although it is understood that men on certain jobs may be assigned to, and work for someone other than their regular foreman.

Any organization chart will vary from plant to plant, since the personal qualifications and characteristics of the men involved will vary. The head of the steamplant may for instance serve as electrical as well as steam and power plant superintendent; but in another case he may be rated as steam and power plant Supervisor. The maintenance engineer may also be classed the same way, either as superintendent or as supervisor, depending on ability, knowledge, char-


RESPONSIBILITIES OF:
CONTROLLER
MAINTENANCE SUPERVISOR
ELECTRICAL SUPERVISOR
STEAM & POWER SUPERVISOR
OR ENGINEERING DEPT.
CHECK "RFR" * ENTER LOGBOOK
PROCEDURE PLAN CRAFT MAN HR EST MATERIAL LIST TOOL LIST
EST. LABOR COST EST. MATER COST EST. TOTAL COST
OK OR OBTAIN OK
STOCK ROOM MAT MATERL ORDERS MAT RECEIVALS
OILING INSPEC HRS MAN HOURS AVAIL FOR REGULAR AND EMERGENCY WORK
MATL ON HAND MAN HOURS REQ
INSPEC # TICKLER
SCHEDULING
DAILY WORK SHEETS BY CRAFTS
FLD CHEK ON PROCEDURS & MAN HOUR EST
SCHED OF CREWS AND SUPERVISION
ROUT.
REGUL
EMERG
ENTER EQUIP CARD PROGRESS CHART LOG - COMPLETION INDIV JOB COST
WORK DIST. SHEET
TIME TICKETS COMPLET REPRTS
MONTHLY JOB COST SUMMARY VS. AUTHORIZED EXPENSES BY DEPARTMENTS MILL RESUME
INDIV. MAN HOURS TO TIME OFFICE
INDIV. MAN HR DTA MAINTEN NCE FILE
REPORTS AS-NEEDED
PLANNING
DATA COLLECTION
ACCOUNTING
PLANNING
WORK
DATA COLLECTION
* "RFR" REQUEST FOR REPAIRS

acter and so on. The foremen as listed may need special assistants if the various shops and work areas are decentralized. You may need a special oiling engineer etc.

With this in mind the chart shown in Figure 2 is probably a fairly representative setup for a maintenance crew of about 90 men. If the force is increased 15 percent it will probably be necessary to add to supervision; if it drops 20 percent it may be possible to cut out a supervisor or foreman and distribute the load on the remaining men. Just be sure you have enough good supervision.

Equipment Lists

It is important to have a simple, dependable and up to date equipment list, giving numbers for all the equipment in the mill. In order to keep the size of such a list within reason, it is suggested that where possible only units are listed, followed by a Roman numeral indicating the sub group for such unit. A beater chest may, for instance, carry the equipment number B 13 V. Subgroup V will give AM as the letters to be affixed for work on the agitator motor. I might mention here that motors, pumps, gear reducers etc., that may be moved around, are listed and numbered separately. B 13 AM will therefore, for general accounting purposes, be charged to B 13, while the maintenance accountant thru his cross index system will put the cost down on equipment card M-65, this being the motor presently used for the agitator.

The sub groups normally can be kept down to less than ten, most of which are small, containing only three or four items.

Stock Room Control

Because an appreciable amount of money is tied-up in the stock, improved bookkeeping methods have been generally accepted, so that most stockrooms of today are fairly well up to date, with clear records of inventories on hand.

With a good equipment card system in the maintenance department, where the individual card gives the information of bearings needed, impeller size used, or whatever specification is called for, and with notations as to what parts are normally carried in stock, the maintenance department can quickly furnish the stockroom with the correct part number without first having to take the machinery apart. If not in stock, the part can be ordered immediately.

Conclusion

This outline has taken in the high-points of a good control system, which is the starting point for good maintenance. The introduction calls for a good deal of patience in setting up the simplest, most useful forms. It also requires a lot of thought and attention to detail, but if you can carry it through you have something on which to base your further improvements.

Your next step will probably be a program to improve your supervision thru educational training courses that catch the interest of the supervisor, and give him the desire to become a good leader.

The last but not the least important step is a study of ways and means of training men for your various craft needs. And if in the end you find that your men are happier in their work, and are proud of their company and of their own achievements you know that you have done a good job.

Ed. Note: For the most recent developments in the career of our author, S. H. Grimnes, see "Paper People" in this issue.

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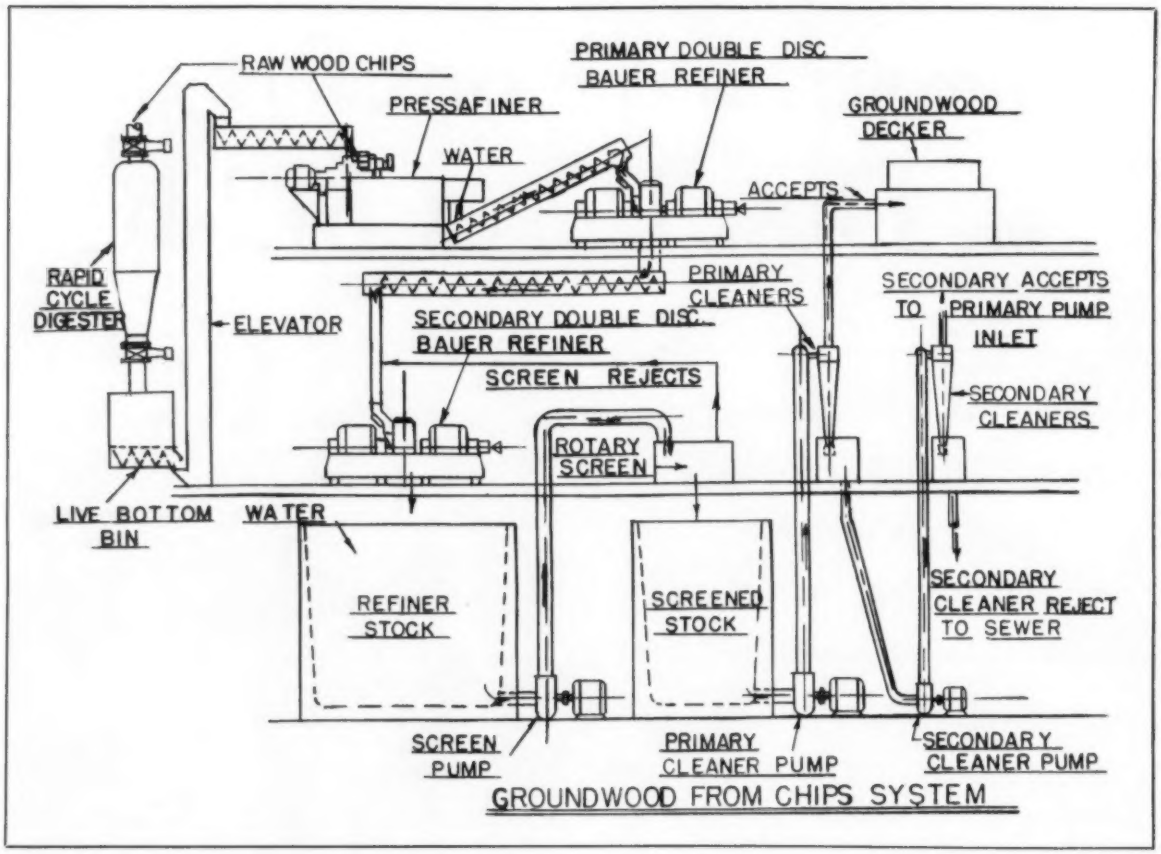


Wider Scope of Groundwood from Chips

- Simplified process for conventional softwoods.
- Modifications to handle little used softwoods.
- Extension to use with most hardwoods.

Lee Eberhardt
Bauer Bros. Co., Springfield, Ohio

Great advances have been made in the production of groundwood from chips since the process was first announced in Paper Trade JOURNAL only five months ago. The process has been simplified for use with conventional softwoods and modified to permit use of softwoods not usually considered suitable for groundwood. What is most significant however is that the process has now been extended to hardwoods. This is a most important and logical development since present methods of manufacturing mechanical pulp from hard hardwoods involve the difficult and awkward treatment of whole logs.

Groundwood from chips, a new concept in the production of mechanical pulp is here to stay. Recent advances and developments in the process indicate that, without question, the method can be effectively applied to the wood species conventionally utilized in groundwood. From an economic standpoint the results are even more spectacular when the process is modified to softwoods not adapted to conventional grinding, utilize hardwoods, and to improve the end product quality of the conventionally pulped wood species.

Rapid advancement in the new techniques indicates that it is entirely possible to include substantial percentages of southern oak and gum in a newsprint or book paper sheet, it is practicable to make a relatively high brightness corrugating medium at very high yields without conventional digestion of the hardwoods. The pulps can be produced at relatively low cost with electric energy and wood costs at current levels. Such possibilities should have a heavy impact on the pulp and paper industry in the hardwood areas and those with an abundance of softwood species heretofore considered unsuitable for mechanical pulping.

Progress has been very rapid since

the process was first announced in the September 14, 1955 issue of the Paper Trade Journal. Since then it has been possible to effect a simplification of procedure in that the Pressafiner is not required for the production of groundwood from chips having equal or better quality when compared with conventional groundwood from the commonly pulped wood species. The Pressafiner can be utilized, however, in cases where unusual conditions or end product exist.

It has also been found that production of the wide variety of pulps possible with the simple train of equipment requires considerable study and work before optimum qualities inherent in the wood type being utilized can be obtained. Conventional groundwood production is relatively simple in that the usual mill has little control over pulpwood condition (it is usually fresh cut or relatively seasoned) to the grinders, and the grinder itself will only produce pulp qualities within a narrow range. The new method becomes complex in that chips can be modified as to moisture content by water impregnation or can be treated with chemicals to produce better end product with improved strength, brightness, and pitch removal.

This ability to modify the raw material together with the inherent flexibility of the equipment utilized with fingertip control over the entire process provides an entirely new range of possibilities for the production of modified and conventional mechanical pulps. It is possible to borrow techniques from all the conventional chemical pulping processes, and to utilize ideas entirely new. There are many indications that groundwood from chips is a simple method with a high demand for technical study to obtain optimum results.

Conventional Groundwood Species

The flow diagram for pulps of this type is a simplification of that shown. Only two stage refining, followed by screening in a rotary screen and Bauer Cleaners, are required to produce conventional or improved pulp quality from the wood species commonly used for the production of mechanical pulp.

Table I shows the comparative results obtained pulping aspen, spruce and a mixture of the two, using the conventional pulpstone grinder and the groundwood from chips method. From the standpoint of physical test properties, in every case the latter method produced a superior testing pulp, while brightness is practically the same. There is, of course, the questions of runability on the paper machine which cannot be indicated by ordinary testing procedures. Similar comparative results have been obtained on western hemlock, balsam, birch, southern pine, jack pine, and several other species.

TABLE I

Wood Species	Total HP Days Per Ton	Can. Std. Freeness cc	Mullen %	Tear %	Tensile %	G. E. Brightness
Aspen	60.1	178	19.7	63.4	20.8	56.5
Aspen	74.4	78	26.3	54.5	26.7	57.2
Aspen (Stone ground)	—	—	18.3	46.4	—	58.6
Spruce	56.3	84	30.0	63.0	28.4	58.1
Spruce	78.7	31	42.8	63.6	37.8	60.0
Spruce (Stone ground)	—	—	23.8	64.0	—	56.9

Note: All strength tests based on average test divided by the basis weight (24 x 36 — 500) and multiplied by 100.

Several modifications of the process have been developed. In some cases extremely dry chips were restored to wet state in the "Rapid Cycle Digester," by evacuation of the chips followed hydrostatic impregnation with water. Also, pretreatment of the chips with sodium sulphite or with caustic, without application of heat has been effectively done.

The following conclusions apply to the results obtained in our lenghty and extensive studies of the process:

- Pulps with physical tests comparable to those of conventional groundwood can be produced from chips by the application of disc refiners and Bauer Cleaners.
- The power requirements are definitely in line with those of conventional grinding. The double disc mill is definitely preferred over the free discharge single disc mill. This is illusrated in Figure 1.
- The use of hot (150°F) water showers on the chips going into the refiner has the effect of producing pulp with higher tearing resistance, slightly higer freeness with substantially the same mullen and tensile, as compared with refiner using cold (65°F) water showers.
- Refining at low consistence (2% and 4% instead of 8%) produced a pulp of higher freeness, about the same tear and slightly lower mullen and tensile strength.
- Impregnation of dry chips (80% b.d.) with water to restore moisture provided strength and freeness tests substantially the same as fiber produced from green wood.
- Impregnation of green chips with sodium sulphite solution (room temperature) resulted in a pulp about 5 points brighter, with about the same strength and freeness when compared with pulp from untreated chips.

Effect of Refiner Type

Figure 1 shows a direct comparison of the results obtained using double disc and single disc refiners in the production of groundwood type pulp from western hemlock chips. There is a sur-

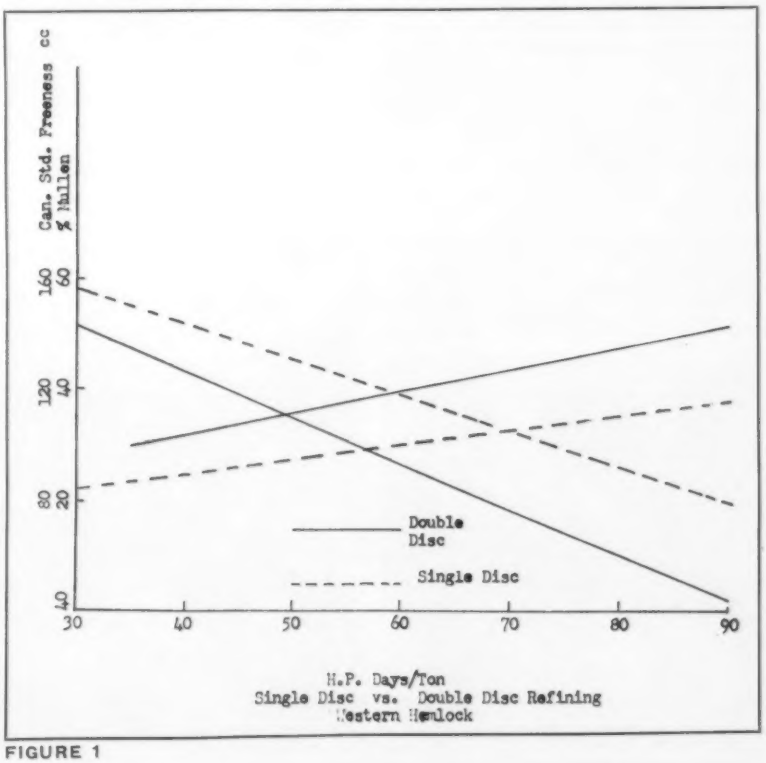


FIGURE 1

prising difference in the results, in favor of the double disc refiner. From this work we have concluded that the double disc mill is essential in the primary or fiberizing stage of the procedure. It is possible that a "pump thru" or pressure type slow speed single disc refiner may have advantages in the secondary or strength development stage of refining.

Blue glass examination of pulps produced from chips using 900 and 1200 r.p.m. single disc refiners indicates the presence of many short stubby shives which are found to a much lesser degree in double disc refined pulps. This "Chop" or "grass seed" is very difficult to remove by conventional screening, once formed the "chop" is almost impossible to fiberize and removal with Bauer cleaners results in an unjustifiable yield loss, since the "chop" has no reclaim value. The single disc pulps at the same power input, even after the Bauer cleaner, do not measure up in physical strength tests to those pulps produced with double disc procedure.

Use of Softwoods Not Usually Pulped

There are a number of softwood species that are found in quantity in the various paper making areas of the U. S. and Canada that have not been utilized extensively for the production of groundwood pulps. This is usually due to pitch content, brightness of pulp, quality of fiber, and/or unusual chemical components. Examples are douglas fir, western white fir, scotch pine, jack pine, and some of the southern pine species.

We have found that it is possible to impregnate relatively small quantities of chemicals into chips of the above types. This treatment followed by two stages of refining, screening, and cleaning produces very excellent pulps with high brightness and excellent strength characteristics. Sodium sulphite has been found to work very well in most cases and its use appears to produce a bleaching effect on some of the wood coloring materials, giving rise to brighter pulps.

The flow diagram for an operation of this type includes the "Rapid Cycle Digester," which is used for impregnation only, not digestion. When the digester is used the chips are subjected to vacuum for air removal and the chemical liquor is then forced into the chips by hydrostatic pressure. At one time presteaming was tried, but it was found that the pulps were generally darkened by this procedure.

It is thought that an excellent wood utilization potential exists for pulps produced by this and similar procedures. There is much to be done along such lines and we are continuing investigative work. The fragmentary preliminary work has produced surprisingly good results. More work and improved techniques to develop optimum procedures and conditions may lead to new pulp types that could have considerable impact on the economies of the industry.

Applied to Various Hardwoods

In general hardwoods have not been utilized extensively for the production of mechanical pulps mainly because of fiber characteristics and brightness factors. The notable exception has been aspen and poplar type "soft" hardwoods, which have been used extensively in the Lake States. The "soft" hardwoods of this type react in the same manner as the conventionally pulped softwoods when pulped from chips. Results obtained from aspen are indicated in *Table I* and have been discussed previously.

The vast majority of the denser hardwoods have never been adapted to grinding by conventional methods. The resultant pulps from conventional grinders are usually weak, "brashy", and of poor color. We have found that most of the dense hardwoods can be made into excellent pulps by a combination of chemical pretreatment with cold soda or hot sodium sulphite followed by two stage refining, screening and Bauer cleaning.

In this case the "Rapid Cycle Digester" is utilized for evacuation and impregnation. The Pressafiner is utilized to remove the surplus or excess chemicals for reuse. The rest of the process is as described for groundwood from chips.

First Hardwood Plant at Gould

The accompaning illustrated flow diagram indicates the entire procedure and equipment requirements for manufacture of hardwood groundwood type pulp. The pioneer plant of this type is designed and will be installed mid-year at the Gould Paper Company, Lyons Falls, N.Y. where the pulp will be utilized in bleached form in book papers replacing kraft pulp and spruce groundwood.

Table II indicates typical results obtained in producing these hardwood pulps. It wil be noted that the refining power requirements are from one to two thirds of that required for conventional softwood groundwood pulps. The freeness level is generally higher, and the mullen and tear values also compare favorably. The brightness level is considerably lower than for conventional groundwood but bleaching experiments indicate excellent response to hypochlorite and peroxide type bleaching in one or two stages. Bleaching to the 65 70 G. E. brightness level can generally be achieved with economical quantities of bleach. (10 to 12% hypochlorite as chlorine and/or ½ to 1½% peroxide (50%)).

The neutral sulphite pulps are generally brighter than the cold soda types, but require approximately the same bleach quantity to reach the 65 70 G. E. brightness level. It will also be noted that the physical strengths are lower than the cold soda types, this together with higher freeness levels indicate adequate strength upon beating.

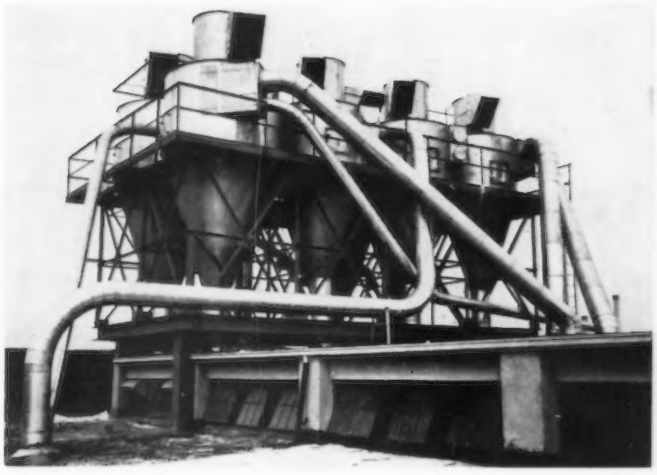
Pulp yields from hardwoods are very high (85 to 92%) and can with reasonable pulpwood and power costs provide a very economical pulp cost. When it is considered that the woods utilized are high density and generally low cost due to non-utilization in many areas, the inherent possibilities and potential are so great as to be difficult to comprehend. It would appear that pulps of these types could make it entirely possible for the industry to reverse the southern trend and move back into the northern hardwoods areas, and conceivably could answer the chronic shortage of newsprint.

TABLE II

Wood Species	Chemical Impregnated	Total HP Days Per A.D. Ton	Can. Std. Freeness cc	Mullen %	Tear %	Tensile %	G. E. Brightness
Hardwood Composite (1)	Cold Soda	35.9	105	36.7	105.0	29.2	34.3
Hardwood Composite (1)	Cold Soda	36.2	141	36.2	94.7	29.7	35.0
Hardwood Composite (2)	Cold Soda	39.7	100	20.9	54.8	24.9	36.3
Hardwood Composite (2)	Cold Soda	30.3	141	18.9	46.3	20.8	35.8
Hardwood Composite (2)	Cold Soda	27.3	110	34.2	63.3	36.0	33.2
Hardwood Composite (2)	Cold Soda	23.5	141	29.7	80.0	31.7	33.2
Hardwood Composite (2)	Cold Soda	33.5	80	28.0	52.0	30.6	35.5
Hardwood Composite (2)	Cold Soda	26.8	148	19.6	52.5	20.8	34.7
Hardwood Composite (1)	Neutral Sulphite	26.9	528	16.1	105.0	14.4	46.2
Hardwood Composite (1)	Neutral Sulphite	32.7	400	22.7	107.0	20.8	48.9

(1) Northern Hardwood Composite: 65% Birch, 30% Maple, 5% Beech
(2) Northern Hardwood Composite: 30% Birch, 30% Maple, 40% Beech

New, Efficient Scrap Disposal In Converting Plant



Pneumatic system collects and stores eight different grades of scrap and trim for central baling at the Carton and Container Division of General Foods.

A unique system has been installed for handling board trim and scrap at the converting plant of the Carton and Container Division of General Foods Corporation at Battle Creek, Michigan. A maze of pipes runs through the plant all ending up at the one point shown above.

The operation, which is divided into eight separate systems for handling scrap and trim from various kinds of boxes made at the plant uses large fans to create a suction whereby scrap and trim material is drawn into the pipes and shredded as it passes through cutting fans. The material is then blown up to the "cyclones" on the roof and deposited by gravity into one of the eight separate collection bins located at the west end of the building.

Baling Improved

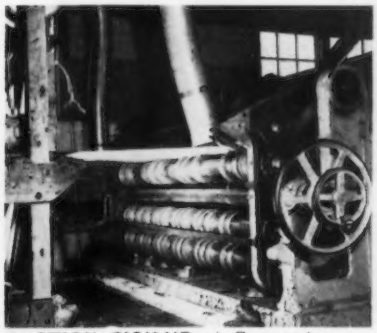
The new installation has vastly improved scrap and trim baling since the balers are now located directly under the collection bins, whereas previously they were located at various points throughout the plant near the operation where the scrap and trim had to be gathered. In addition there was the problem of different types of scrap and trim occasionally being mixed into one bale, thus reducing its value.

The eight collection bins are so arranged as to provide proper segregation and thus assure that each bale will achieve maximum value by being of one type rather than a mixture. For instance, bales of two types of solid bleached kraft board — regular and waxed — are not valued as highly as a mixture as they would be if the bales were composed strictly of pure kraft board. In addition, to improving baling operations, the new disposal system significantly improves housekeeping at the plant, through the elimination of scrap tubs and other items.

The overall cost of the new operation was approximately $75,000, but officials are confident that it is money well-invested because of the increased return in scrap sales that will be realized through the preparation of bales which more completely meet purchasers' requirements for being free of extraneous or undesirable material. It has been estimated that returns from scrap sales will be increased $25,000 per year through the use of the new disposal system.

Planned and Studied

The disposal system was designed by the Ohio Blower Co., Cleveland, Ohio, in cooperation with the Carton and Container Division Engineering Department. It was in the planning and study stage for over a year since special attention had to be given to certain problems of installation. As an example of one problem, the building had to be inspected to determine whether it could withstand the weight and stress of the system. It was only after this project and others were completed that preliminary installation work was commenced last August and finally completed at the end of November.



SUCTION PICK-UP at Corrugator

DIFFERENT ARRANGEMENT at Pick-Up of Slitter.

ONE OF THREE Balers Under Collection Bins.

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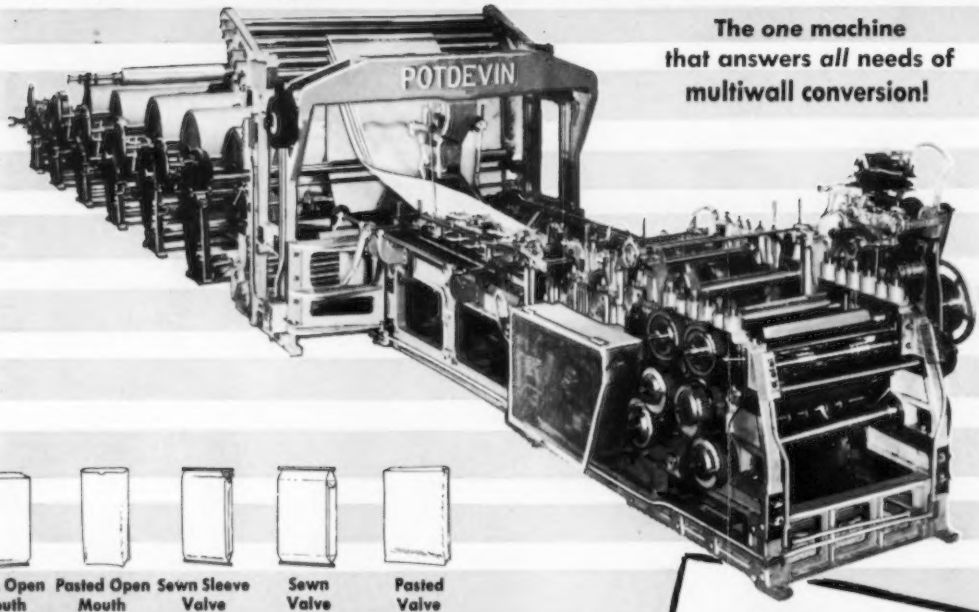

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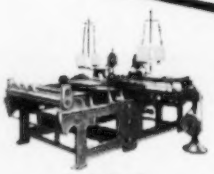

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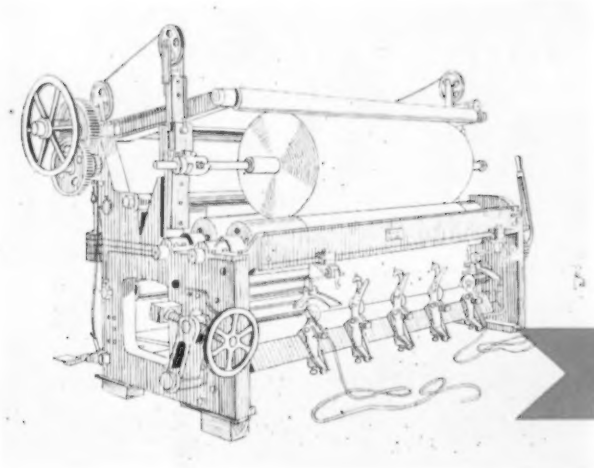

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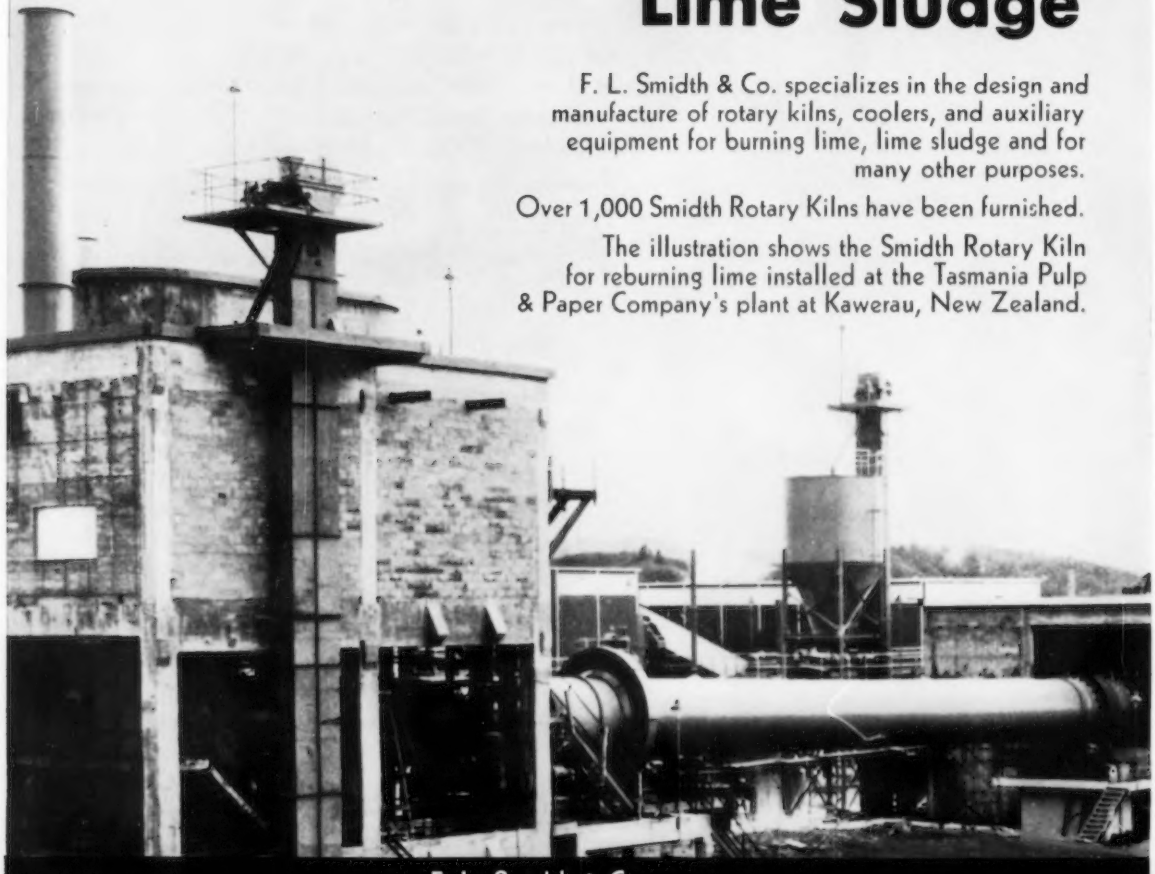
The illustration shows the Smidth Rotary Kiln for reburning lime installed at the Tasmania Pulp & Paper Company's plant at Kawerau, New Zealand.



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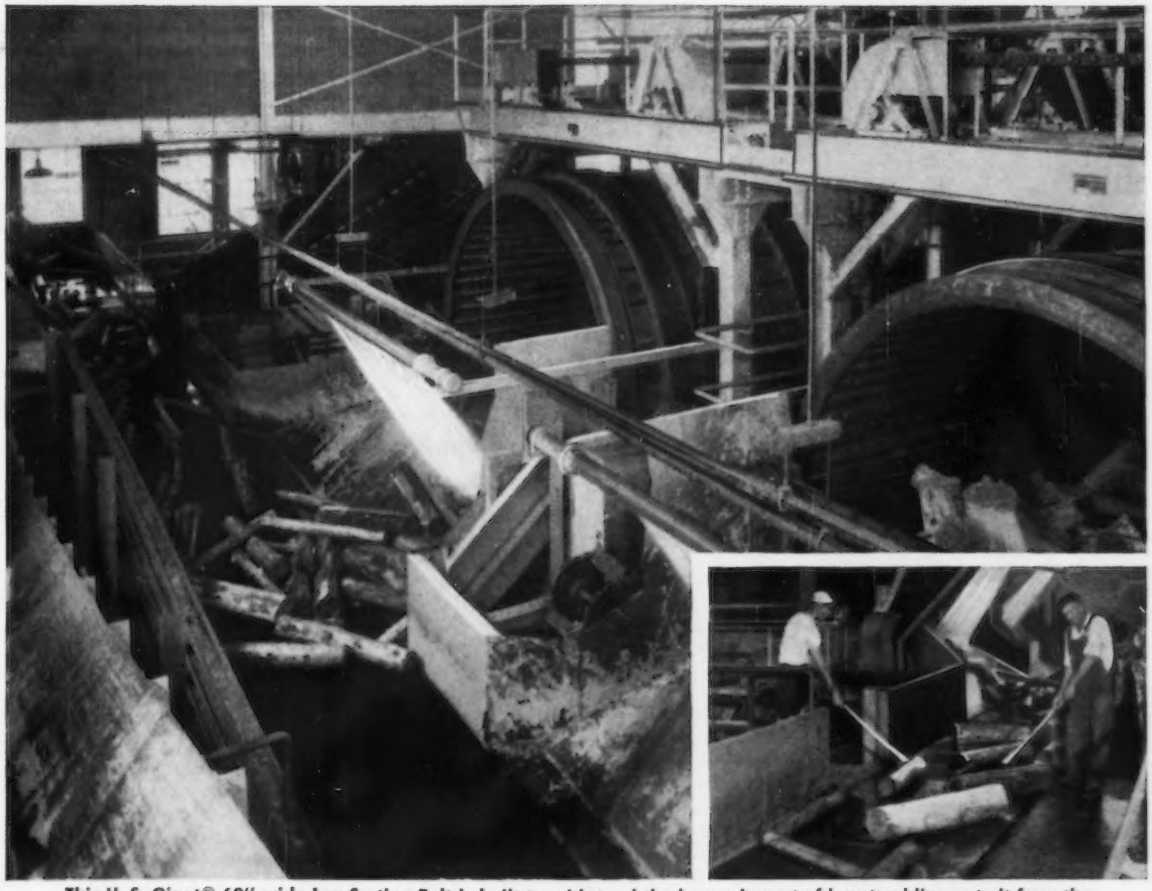

This U. S. Giant® 60" wide Log Sorting Belt is built to withstand the heavy impact of logs tumbling onto it from the debarking drums (left) and to resist the sharp points of the pickaroons which the men use to sort out rejects (right).

When the Mosinee Paper Mill Company, Mosinee, Wisconsin, required a conveyor system to step up production of wood and pulp, they turned to the company that had helped with the same problem on many installations in the United States and Canada—U. S. Rubber.

"U. S." engineers studied the requirements, the mill layout, and—above all, the problem of costs. Eight "U. S." conveyor belts were installed, made endless on the job. Production went up to a new record for the log-sorting operation of Mosinee Mills.

The easiest and most economical way to increase haulage and to lower costs is to get in touch with factory-trained United States Rubber conveyor belt engineers. Their wide and varied experience in materials handling for the wood products industry allows them to give you the very best help obtainable.

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STRAP WRENCH is recommended for tightening threaded pipe.

THREADING pipe with standard hand threader.

How Plastic Pipe is Used in Our Mills

A discussion of the application of plastic pipe with case histories of experiences in six mills.

David T. Skowlund

B. F. Goodrich Co., Marietta, Ohio

After five years of knocking on doors, rigid, corrosion-resistant plastic pipe is coming into its own this year in the pulp and paper industries. Evaluation programs, conducted on the new materials by many mills, matured in the past year or two in a kind of geometrical progression—flashing approval of various types of plastic pipe for specific service in the mills.

In 1955, more mills put plastic pipe to work than ever before; and the trend is up in an astonishing spiral. Today it is estimated that 500,000 feet of plastic pipe is now at work in the manufacture of pulp and paper. Of 97 mills surveyed in 1955, 50 per cent reported the use of plastic pipe in manufacturing operations. Some authorities in the plastics field forecast that the consumption of plastic pipe in the paper and pulp industry in 1956 will reach about one million feet.

Engineers with six months' to four years' experience with working installations of plastic pipe say today that plastic pipe is no longer on test with them. It's a proved, accepted material. The total footage in their plants is growing month by month as replacements come up or new installations go in.

Engineers who have worked with the new materials say that, for many pulp and paper mill applications, plastic pipe does the best job for the lowest cost. This had to be proved and there were obstacles to overcome, of course:

"The material seemed so different that it took a little courage to give it a try. At first, our pipers approached it with some misgivings," said one maintenance engineer. "They soon found that plastic pipe is easy to handle. With new high impact rigid pipe we use standard equipment for threading.

Its light weight makes it easy to install. Flanges and other fittings are no problem and we've even used flame from a gas torch to bend it. You might say that we're trending toward plastic because of better corrosion resistance at lower cost."

Let's take a look at some of the ways engineers have put plastic pipe to work and review some of their thoughts on future use of plastic pipe in the pulp and paper industries.

This article is the outcome of requests for information received in connection with our survey on the use of pipe and fittings in the pulp and paper industry. Our research panel of 150 top technical and production executives in the industry submitted over fifty requests for additional information on subjects covered by the survey.

Articles covering a number of other points raised by the panel will be forthcoming in future issues.

Falulah Paper

In the Falulah Paper Co., Fitchburg, Mass. (producer of coated paperboard) a 120-foot line of two-inch high impact rigid Koroseal pipe conducts 50 per cent alum solution at atmospheric temperatures and 20 p.s.i. from tank truck delivery point to a 9,000-gallon storage tank. Koroseal pipe is manufactured by The B. F. Goodrich Company Industrial Products Division, Akron, Ohio. This is a new installation, replacing an operation based on use of dry alum. The line is insulated where it passes over heated pipes. In service nearly a year, a 1½ rigid PVC pipe carries alum from a pump to a tank for diluting highly concentrated alum, then returns the liquid from the dilution tank to the main storage tank. Seventy feet of brass pipe which conducts alum from the proportioning room to the Jordan intake will

WELDING flanges on 6" pipe using standard hot air welding gun.

FORMING 90° pipe bends using a wooden form.

be replaced soon by Koroseal material. Service life of brass is about six months or less depending on the concentration of the alum. Koroseal pipe completely resists this corrosive action.

Plastic pipe has performed satisfactorily in initial installations. Engineers here are now on the lookout for additional applications where plastic pipe can do a better job than conventional materials. Rigid PVC pipe is a favorite here because it is easy to work with in cutting and threading. They have had a lot of trouble here with breakage in high alloy type materials.

S. D. Warren Experience

At the S. D. Warren Mill in southeastern Maine (producing plain and coated book paper) 600 feet of two-inch rigid plastic pipe (both Kralastic and high impact polyvinyl chloride) conveys salt brine at room temperature and 20 p.s.i. maximum from tile settling tanks to the electrolytic cells in the chlorine-caustic plant. Wrought and galvanized iron pipe replaced on this installation not only corroded on the inside, because of salt brine action, but outside surfaces could not withstand the corrosive attack of chlorine fumes present in the atmosphere. The plastic pipe now on the job is unaffected by either of these corrosive materials. Installed more than three years ago, the plastic pipe looks as good as ever.

In the same plant, about 200 feet of two-inch PVC pipe conveys calcium hypochlorite at 40 p.s.i. and 90°F from absorption towers to the flow box on the clarifying system. Installed in midsummer, 1955, it replaced steel pipe which rapidly succumbed to corrosion and lime build-up. PVC pipe does not corrode in this service and its glass-smooth, interior finish radically reduces the rate of lime build-up.

Elsewhere in the plant, sections of a 1200-foot pipeline are two-inch PVC pipe which conveys alum at atmospheric temperature and 40 p.s.i. maximum from storage tanks direct to paper machines and beaters. In use three years thus far, the plastic pipe has performed to complete satisfaction. In the 1200-foot line some sections are still the original glass pipe, stainless steel, copper and lead-lined steel pipe. These are being replaced as they fail with PVC pipe now being standardized on by the maintenance department.

Three-foot lengths of two-inch rigid plastic pipe are used in the plant to replace glass tubing in each of the 250 individual electrolytic cells. The short lengths of plastic pipe convey chlorine gas at low pressures to tile pipe that carries the gas to chlorine water absorption towers.

Trouble with glass tubing is that it breaks too easily. The cells manufacture chlorine gas which eventually becomes calcium hypochlorite needed for final bleaching of pulp. The maintenance engineer here says that plastic pipe may replace the tile pipe in this installation in the near future.

Improvisation possible with plastic pipe is shown in another use of the product in this plant. Rigid plastic pipe has been used to create plastic float valves which control feeding of salt brine at low pressure and room temperature to electrolytic cells. Ten-inch lengths of two-inch plastic pipe are sealed at one end with a leakproof base affixed with a solvent adhesive. The float valves, numbering 250, formerly were glass and easily broken. They all are gradually being replaced by rigid plastic. Plastic pipe is also used at this mill to vent rubber-lined tanks which contain chlorine water on its way to the hypochlorite absorption towers.

Already in the vanguard of those exploring the possibilities of plastic pipe in the pulp and paper industries, engineers at the S. D. Warren plant believe that there is a remote possibility that stainless steel pipe can be replaced by high impact PVC plastic pipe for the coating lines and for handling various coating preparations. In such an application for example, the price of plastic pipe—as well as its performance—would make it an attractive alternate. A good potential is also seen here in the use of plastic pipe to conduct bactericides at room temperatures. Corrosive-resistant properties of plastic pipe would qualify it for this service.

While this mill may be more advanced in the use of plastic pipe and more aware of its potential than some others, many engineers in the pulp and paper industries now know exactly where they can use the new materials to get better performance at lower cost. They see two advantages in plastic piping: 1) it's suitable wherever a high degree of corrosive resistance is required; 2) where installation and maintenance costs are high economics of plastic pipe are attractive. The product is available at a fraction of the cost of brass, copper, stainless steel; weighs about a quarter as much as standard metal pipe and reduces handling time and shipping costs.

Fitchburg Paper

In the Fitchburg Paper Co.; Fitchburg, Mass.; (producer of specialty papers), a 1½ inch high impact rigid Koroseal pipe conducts hypochlorite bleach liquor at atmospheric temperature and 40 p.s.i. from a storage tank to the top of 60-foot bleaching tower. This is a new installation. The mill, which formerly purchased bleach, now manufactures its own.

In another new installation, all the spray piping and small tubing in a filtering system for mill water are plastic for improved resistance to corrosion.

Plastic replaces iron pipe and is solvent —cemented into place. About 200 feet of three-inch polyethelene flexible pipe conducts cold water from a deep well for use in manufacture of bleach.

This mill is making progress in use of these new products. Engineers here expect to use plastic pipe wherever it will prove advantageous, — where price is lower for initial installation or where service life is longer.

Oxford Paper

In the electrochemical department of the Oxford Paper Co. in Rumford, Maine, one-inch rigid PVC pipe replaced hard rubber pipe, in 1953, to form outlets for 288 individual electrolytic cells. The change was made to gain additional strength and improved corrosion resistance. This mill makes its own chlorine and caustic. The one-inch rigid plastic pipe conducts an 85 per cent concentration of chlorine from the cells. The pipe also handles brine saturated with chlorine at a temperature of 50-60 degrees C. After nearly three years' use, rigid plastic pipe still gives perfect service.

In the same plant, one-foot lengths of ¾-inch rigid PVC pipe act as inlet connectors for mercury electrolytic cells. The pipe conducts saturated brine from the main rubber hose line to electrolytic cells. On the exit end of cells, one-inch rigid plastic pipe conducts 85 per cent chlorine gas at 50°C and spent brine, saturated with chlorine, into three-inch ceramic pipe which takes the chlorine to the chlorine water tower and to the calcium hypochlorite tower. Plastic pipe in this installation replaced hard rubber which was subject to frequent replacement because of corrosion and breakage.

Engineers are considering a plastic pipe replacement for the eight-inch rubber-lined pipe which collects 85 per cent chlorine gas from the cells and conducts it to chlorine water tower. The line operates under slight vacuum. Savings could be realized from the use of plastic pipe. An 1,800-foot tile pipeline may also run into rough competition from plastic pipe in the near future. A three-inch tile line runs beneath the electrolytic cells, carrying chlorine and spent brine. Tile deteriorates and cracks easily. Plastic pipe may be next on the program here.

In this mill, the purchase of small, hard rubber pipe and fittings has stopped entirely and plastic piping is used in their place. The product is still relatively new here but engineers are learning more about it all the time through trial installations. Future plans call for replacement of stainless steel or wrought iron by plastic pipe wherever temperature conditions permit. Experience up to this point has given engineers an idea of how plastics may be used in the pulp and paper field. There is growing confidence here that a sound decision can be made in the case of plastic materials vs. conventional materials in a given application.

Brown Co.

The Brown Co., in Berlin, New Hampshire, has just purchased 200 feet of two-inch high impact rigid Koroseal pipe, with necessary fittings and valves, to conduct liquid alum at room temperatures and low pressures. Another 400-foot line of rigid PVC pipe conducts sodium hypochlorite at atmospheric temperature for sulfite bleaching process. This line replaced cement-lined steel pipe.

This mill is trending heavily, to date, toward stainless steel for services where corrosion resistance is needed. However, test programs are getting underway and recognition is starting to be given to the importance of plastic pipe in handling chemicals for bleaching pulp. Plastic pipe offers an economical alternate from the cost of shifting from steel to stainless steel to obtain improved corrosion resistance.

Newton Paper Co.

In the Newton Paper Co. mill, Holyoke, Mass.; (producer of specialty heavy paper) 500 feet of two-inch high impact rigid Koroseal pipe conducts canal water for wash-up service throughout the mill. This is a new installation. Plastic pipe in this service is cheaper than brass or copper tubing and withstands surge pressures up to 160 p.s.i. Its light weight makes it easy to install.

This new installation provided an "education" in plastic pipe for the paper company's maintenace engineers and pipers. It should serve as a springboard toward additional usage. Pipers were impressed with ease of fabrication and installation—learned to work with Koroseal fittings such as 90-degree elbows, flanges, solid plugs, Tees, couplings, caps, reducer bushings, nipples, gaskets and valves as needed. This is an example of how plastic pipe, fittings and valves are finding more and more general purpose uses when maintenance costs of metal pipe and fittings are found to be high in comparison with those of the new plastic materials.

Summary

An up-to-date score card shows that elsewhere in the pulp and paper industries, as well, plastic pipe is vying with traditional materials such as steel and stainless steel to handle white water, caustic soda, sulfuric acids, alum solution, calcium hypochlorite, sodium hypochlorite, chlorine dioxide and fresh water.

A summary of the potential of just one type of plastic pipe,—high impact rigid Koroseal—is revealing in this regard. For use in the pulp and paper industries, rigid Koroseal pipe and fittings will handle the following chemicals to saturation and up to 150 degrees F.; calcium hypochlorite, chlorine (gas-wet), sodium hypochlorite, chlorine dioxide, alum, caustic soda, ammonia and chlorine water. The same plastic will handle any concentration of tannic acid or sulphuric acid up to 15 per cent.

As an example of working pressures at which some varieties of plastic pipe may function, the figures in the table below, relative to rigid Koroseal pipe, may be of interest.

All types of plastic pipe have temperature limitations. Solutions carried by rigid Koroseal pipe, for example, should not exceed 150 degrees F. Piping systems should not be installed near steam lines or other equipment that will raise area temperature above 150 degrees F.

Literature on the subject, covering all varieties of plastic pipe, recommending uses and advising on installation and fabrication, is available from plastic pipe manufacturers. Major manufacturers have warehouse stocks of plastic pipe in leading distribution centers throughout the nation in addition to stocks now carried by many of their local distributors in the mill supply field.

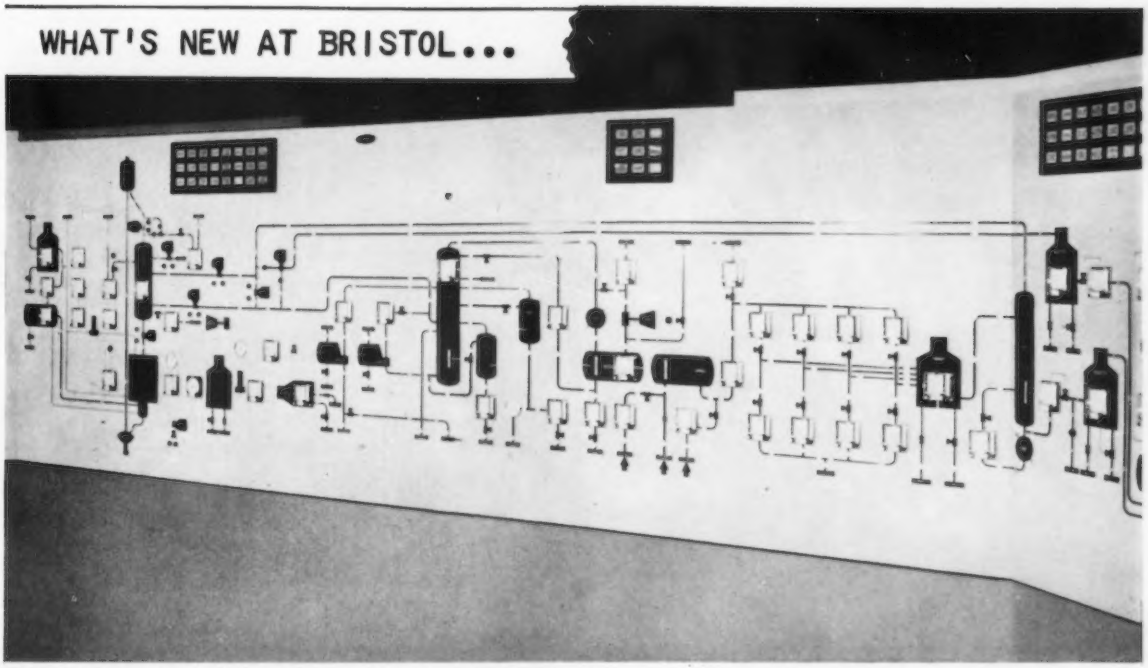
High impact, rigid Koroseal pipe, fittings and valves described in the case histories presented above were purchased from stocks maintained by Portland Rubber Co., Portland, Maine, or Hope Rubber Co., Inc., Holyoke, Fitchburg and Watertown, Mass.

RECOMMENDED WORKING PRESSURES*
(Factor of safety = 13 to 1)

Pipe size Inches	250°C=77°F	52°C=125°F	66°C=150°F
½	140 PSI	90 PSI	60 PSI
¾	120	75	50
1	110	70	45
1¼	95	60	40
1½	85	55	35
2	75	45	30
3	70	50	30
4	60	40	25

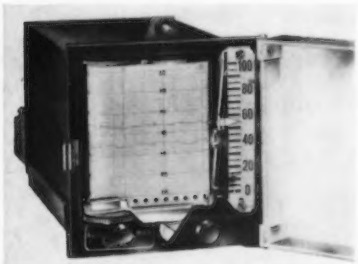
* This applies to standard industrial piping systems subjected to usual pressure variations. For lines having a uniform steady flow and pressures, these recommended working pressures can be increased 50 percent.

WHAT'S NEW AT BRISTOL...



TYPICAL GRAPHIC PANEL of Bristol Metagraphic instruments in oil refinery.

SIX-POSITION TRANSFER VALVE (on one knob) for cascade control.



THIS METAGRAPHIC TWO-PEN RECORDING RECEIVER records, indicates and controls one variable, and records another. It gives a continuous indication of either set-point or valve-position and indicates the other when valve knob is depressed.

Bristol's Metagraphic Receiver line

gives you 35 models to choose from

A new degree of performance flexibility in a pneumatic receiver

Bristol's Metagraphic Receiver is offered for up to 3 measured variables – choice of three- or six-position transfer valves on one knob.

Full plug-in construction provides a flexibility of use that can't be matched. You can change a recorder to an indicator or vice versa in less than 10 seconds. If trouble is suspected, the unit can be replaced by a spare, checked in the shop – eliminating down time.

The chassis of a Metagraphic Receiver can be withdrawn to an intermediate position while still operating. In this position, receiver can be inspected, charts changed, pens inked, zero adjusted, and clock serviced.

Continuous valve position indication on same scale as set point. "Bumpless" transfer is effected simply by matching pointers – no need to read scales.

High-visibility colored fluorescent paints make pointers easy to tell apart. Pointers for a given function are the same color in all instruments.

Air chart drives are 100% pneumatic – no electricity needed. Operates from 20 psi air supply.

Universal piping manifold can be adapted to any piping (2-pipe or 4-pipe system). No special tools, no parts required.

Write for the Bristol Metagraphic Receiver bulletin. The Bristol Company 166 Bristol Road, Waterbury 20, Conn. 5.43

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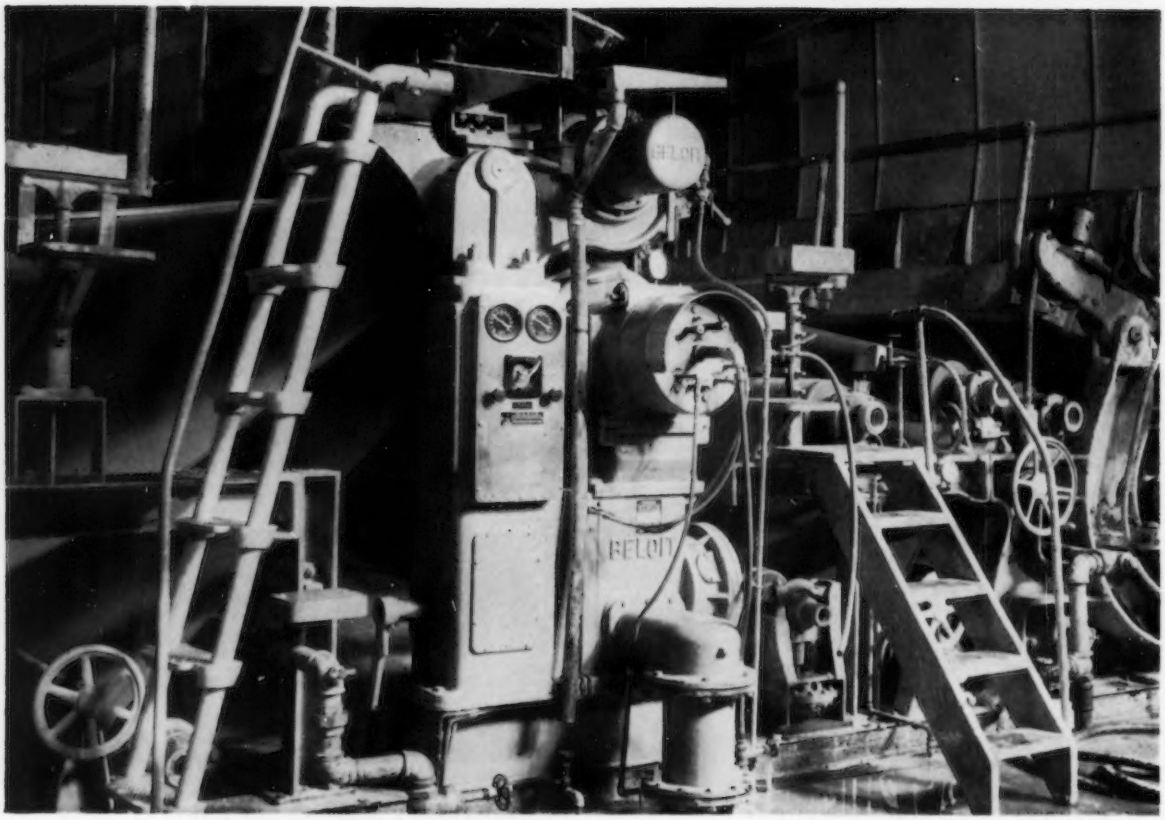
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



Modernizing A Press System With An Air Bleed Press At Wisconsin Rapids

This press modernization resulted in a speed increase from 900 f.p.m. to 1250 f.p.m. on the same grade and weight, a reduction in drying steam and improved paper quality.

M. V. Molsberry
Chief Engineer, Consolidated Water Power & Paper Co.

In the manufacture of our principal product, Consolidated Enamel Printing Papers, we employ nine paper machines. One of these machines, Number 4 at Wisconsin Rapids Division, went into operation in 1921 and held for some time the world's sped record for newsprint. This unit, with a designed speed of 1200 f.p.m., had a good long wire and 6 ft. diameter dryers. Unfortunately these large dryers were rather closely spaced so that the metal to paper contact in the dryer section was great, compared with the paper to air exposure between dryers. This had always made it unusually difficult to obtain even drying and continually resulted in dry edges and tendencies to cockle.

Drying Problems

When the machine was converted to the manufacture of the first machine coated paper in 1934, the coater was installed in a space obtained by removing several dryers. This, of course, called for a reduced speed which was no immediate problem, for at that time no one had yet perfected a high speed machine coating process. Over a period of years in which several improvements and modifications were made to the machine and coater, we increased this machine's speed to 900 f.p.m. but lack of drying capacity prohibited further advances. Changes to the hood and air system were unrewarding, in fact increasing the quantity of air exhausted made conditions worse. Dry edges got so bad and uncontrollable that we had to slow down the exhaust fans by changing their V-belt drives. About this time the Beloit Iron Works told us of their success with a new type of press arrangement called an "Air-Bleed Press." It was claimed that this new press not only would im-

prove drying in the press section but would produce a stronger and more stable sheet, decrease cockling, and help eliminate dry edges.

Following further analysis of these claims and a study of the limited operating record of this new press, we concluded it would undoubtedly improve the operating efficiency of Number 4 machine, bringing it up to high standards of our other machines. An order was placed for the second press position on this machine and Consolidated soon after became one of the first users of the air-bleed press.

Air Bleed Principle

The air-bleed press principle has been discussed in several articles previously but perhaps a short review would be advantageous to those who are not familiar with the subject. Referring to Figure 1, it should be noted that the suction box is somewhat wider than usual and that it straddles the nip. The felt forms the necessary seal over the suction box as the sheet is separated from the felt when entering and leaving the nip. Two rather definite conditions or results are unique to the air-bleed press. First, the sheet must be dry and strong enough so it can be introduced into the nip when separated from the felt; therefore, the air-bleed press would ordinarily be used in a second or third press position. Secondly, since the suction box is sealed only by a porous felt, large quantities of air bleed into the suction box, hence the name. The vacuum held in the box is quite low. On a new felt it is around 5" Hg. and on older felts it runs up to 10" Hg. and more, which, compared to a conventional suction press, is relatively low.

This new idea in pressing works on the basis that the felt itself is dried by the air passing through it. Water expelled from the paper in the nip of the press is blotted up by the felt which is drier than the paper. The vacuum on the leaving side of the nip is necessary to whisk away the moisture entrained in the felt as well as in the holes of the press cover and shell.

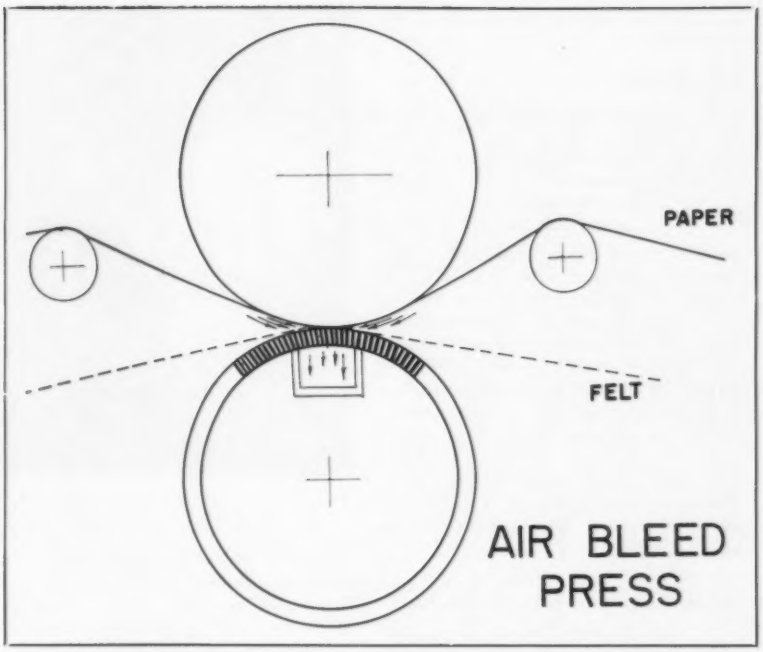


FIG. 1—PRINCIPLE OF THE AIR BLEED PRESS

Results Obtained

The base sheet on which we coat on this machine usually has a groundwood content ranging from 40-60 per cent based on the fiber content. With the old press arrangement consisting of a suction first press, plain second press, and plain third press, we used to deliver a sheet to the dryers at 29-30 per cent dry. When the air-bleed press was put into service this was changed to 35-36 plus per cent dry. Offhand this increase in dryness does not sound as spectacular as it really is; for a condition of 30 per cent dryness there would be .43 pounds of paper per pound of water content; for a condition of 36 per cent dryness there would be .56 pounds of paper per pound of water. Since the capacity of a dryer is mainly its ability to evaporate water it can be seen that we were able to increase our paper production capacity by the ratio of .56 divided by .43 or to 130 per cent with the same dryer section.

Tests showed that the third press was not contributing much more than 0.1 per cent to this dryness so recently we have removed the third press and installed two more dryers in the space vacated. The present machine arrangement is as shown in Figure 2.

The over-all result of this press modernization has been an increase of machine speed from 900 f.p.m. to 1250 f.p.m. on the same grade and weight of paper, a reduction in our steam con-

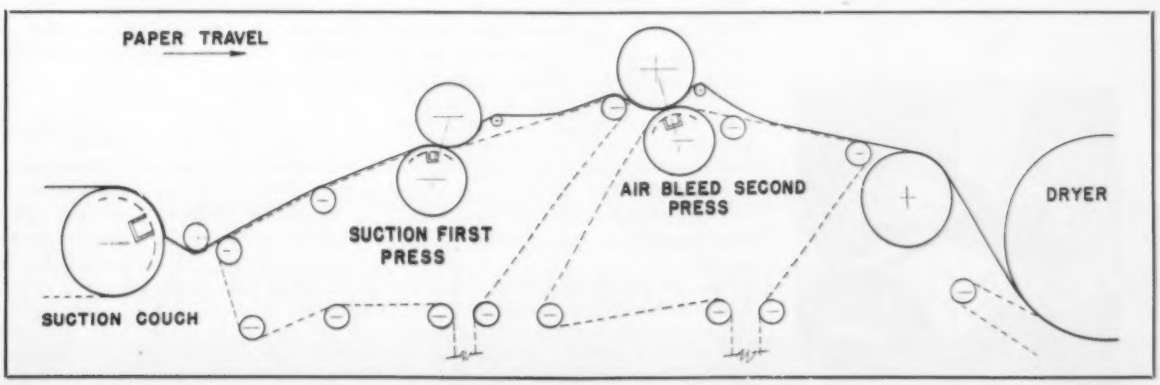


FIG. 2—NEW PRESS ARRANGEMENT on Number Four Machine at Wisconsin Rapids

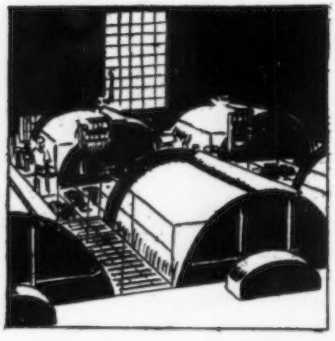
sumption for drying and improved paper quality.

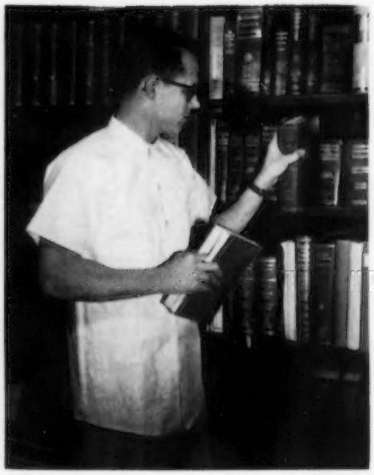
Press Details

The photograph at the head of this article (taken by Beloit Iron Works and featured in an advertisement) shows the actual installation on our No. 4 paper machine. The press loading is by an air diaphragm mechanism and the felt has an air-operated felt guide. Details of this air-bleed press are: face width 170", diameter 28" rubber covered; the top roll is granite. It uses an interchangeable shell with the suction first press which has been in service for a number of years. The felt used on the air-bleed press is interchangable with the first press in weave, weight, and length. The suction boxes are different, 4" wide in the first press and 7" wide in the air-bleed press. The press is designed for a loading of 200 lb./in. max. We normally run at about 150 lb./in.

Other Improvements on the Machine

Not directly related to the press modernization have been three other improvement programs for this same machine. An air cushion pressure head box was added to the machine several years ago; this helped us get up to 900 f.p.m. initially. Another improvement which was completed this past summer consists of a new set of gears for the dryers. The top dryers have cast iron gears but the lower dryers have a plastic fiber filling. The new gears have contributed much to smooth running and noise reduction. The last program, which is long range and recently started, is a change-over to anti-friction bearings and housings for the dryers. We expect to continue this program by changing a few at a time, as convenience permits, or more probably as maintenance requires it to be done.





Age of Paper Clothes Has Arrived Says Kimberly-Clark

Reusable raincapes, wrap-around lab coats, sport shirts, single-use uniforms, and even high-style ladies frocks and skirts are being created of paper by Kimberly-Clark Corp. What is more K-C thinks the future for its new paper-fabric is great.

Known as Fabric K-2000, the material is manufactured from a thread scrim and plies of cellulose wadding and can be made to conform to many specifications: strength, appearance, texture, water resistance, and flame resistance. It is also known that various other requirements can be "built-in" to fit special needs.

Breaking the news of K-2000 in the current issue of its company magazine, *Cooperation*, Kimberly-Clark people explain that the paper fabric is still in the experimental stages, but that K-2000 garments of many types are available for test purposes and trials. "Those garments have made a real impression on important people in the garment industry," the article says. Potential success of the fabric is reputed to lie in the fact it can do some jobs better than any textile fabric and can be produced for relatively low cost at high speeds.

Made By Lamination

Kimberly-Clark reports that "none of the usual steps in weaving cloth are involved. . . . In one form of the fabric, the *base* is a cross-laid web of threads, held together by an adhesive. (The threads may be any of several kinds—rayon, nylon, and glass have all been tried successfully). They can be varied as to denier and number per square inch, thus controlling fabric strength and stretch.

"Several plies of high wet-strength cellulose wadding are laminated to each side of the web, forming the *skin* or surface of the K-2000. It is in making the wadding that some of the important special features of the product are built in —such as resistance to wrinkling, scuffing, linting, as well as desired draping qualities.

"Color and texture are easily controlled, too. It can be made to look like any of several woven textiles. It can be printed in solid colors or in prints. Drape can be varied in a number of ways. . . . It cuts like paper and can be sewed on a sewing machine. Attachment of fasteners or zippers seems to offer no problem. It can be glued, or fastened by heat sealing. . . ."

Uses already explored by K-C are throw-away protective coats and coveralls (as destroyable filter protection from radioactive dust), doctors' jackets, safety caps, ladies' prints and even swim suits.

At Kimberly-Clark's extensive pilot plant operation in the research center, Neenah, Wis., many of the basic problems have been worked out; however, quantity production, it is said, is still in the future. It awaits more definitive answers to such unknowns as the size of the market, best marketing technique, and where production should be centered.

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ALTHOUGH we are in the pipe and tubing business, we don't limit ourselves to manufacturing and selling our product.

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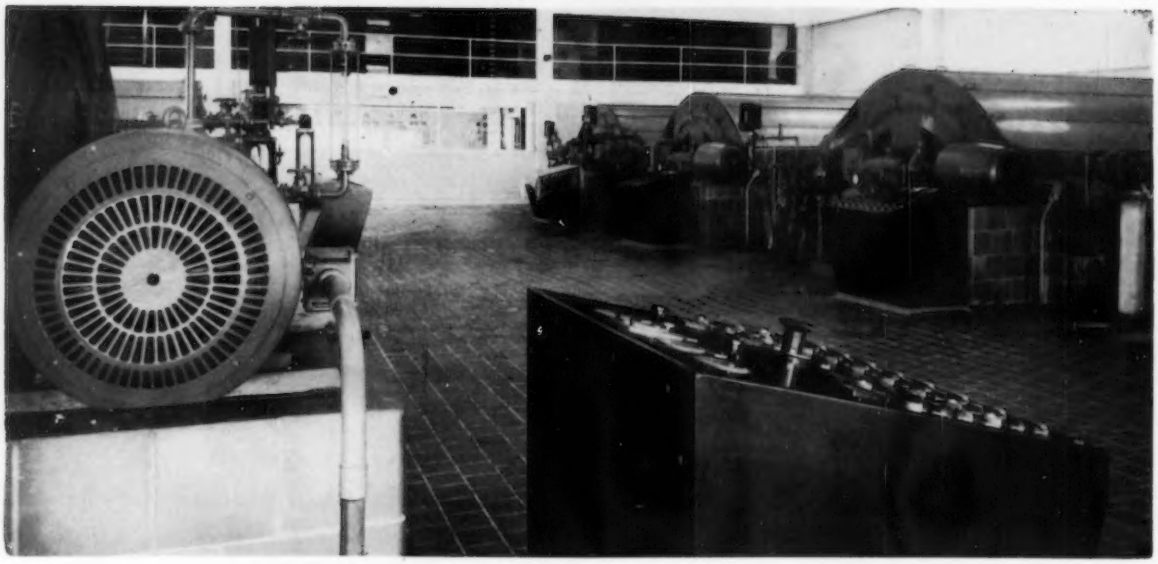


Constant Chlorine Pressure Gives Uniform Bleaching at Camp

Robert Wheless

Superintendent of Bleach Plant, Camp Manufacturing Co.

The trend toward plant-wide instrumentation and the glamor surrounding centralized control systems and "nerve center" control panels often obscure the important role played by the individual components.

A case in point can be found in the bleach plant of the Camp Manufacturing Company of Franklin, Va., one of the nation's leading integrated paper mills. One of the most interesting engineering features of this thoroughly instrumentized plant is a prosaic-looking pressure balance regulator. This regulator operates independently (it cannot be adjusted from the central control room or the superintendent's office) to faithfully control chlorine pressure. Despite variations in the chlorine supply pressure the regulator holds pressure constant in the line supplying chlorine gas to the bleaching towers. Further, it needs little if any attention from the operators.

This regulator, designed by Honeywell's Valve Division, represents further improvement in the equipment for bleaching kraft pulp.

The 70-year-old Camp organization has grown from a modest-sized lumber mill to be one of the industry's leading paper mills. From forests surrounding its plants, it logs both hard and soft woods and turns them into a wide variety of kraft papers including laminating, bag and sack, gumming, saturating, wet strength, waxing, tablet, foil backing, envelope, and folding box board. The kraft pulp mill was constructed in 1937 and the ultra-modern bleach plant in 1953.

In the five-story brick and concrete building, this plant bleaches a maximum of 300 tons of kraft pulp daily, using up to 2,000 pounds of chlorine per hour. For efficiency and low cost operation, the bleach plant relies heavily on instrumentation for centralized supervision and control, with a graphic panel depicting the entire bleaching operation. However, all of the instrumentation and controls, with the exception of the pressure balanced regulator, are similar to those seen in other bleach plants and have been described previously. While most modern bleach plants are similar and use almost identical instrumentation, the regulator in this case is unique.

Highly Accurate Gas Measurements

To keep proper material balances during the chlorination of stock, the chlorine gas flow must be accurately measured. This can be done with rotameters, providing we carefully maintain the gas temperature at 110 F and its pressure at 50 p.s.i.g. To do this requires both steam heating and pressure regulation.

The chlorine is received as a liquid under pressure in tank cars which are

connected directly to the plant piping as required by the bleaching process. As the chlorine is used, the cars are padded with air to keep up the pressure and to force all of the chlorine out of each car. Unfortunately, air padding cannot be controlled to maintain a perfectly steady pressure.

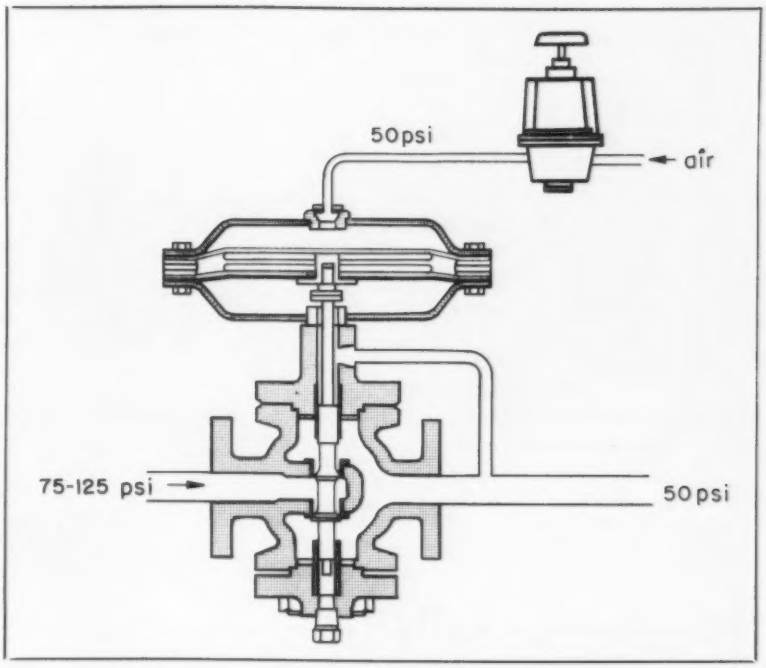
From the tank cars, the liquid chlorine flows to two steam-heated vaporizers where its temperature is raised to 110 F. To further complicate the difficulty in maintaining constant chlorine pressure, the operation of the traps in the steam lines to the vaporizers introduces some additional fluctuations in gas pressure. The pressure of the gas from the vaporizers varies between 90 and 95 p.si.ig. depending on the air padding and on the operation of these steam traps. Also, there are even greater momentary variations in this pressure when the tank cars are switched. Even with constant temperature, it is impossible to obtain accurate flow measurements when the pressure varies so much.

The chlorine pressure regulator, as illustrated, is pressure balanced with a quick-opening, double-seated plug which is constantly positioned so that the outlet pressure always equals the air pressure applied to the top of the diaphragm. The chlorine gas outlet pressure is applied to the underside of the diaphragm and any difference between it and the air pressure creates a movement of the plug in the necessary direction to eliminate the difference.

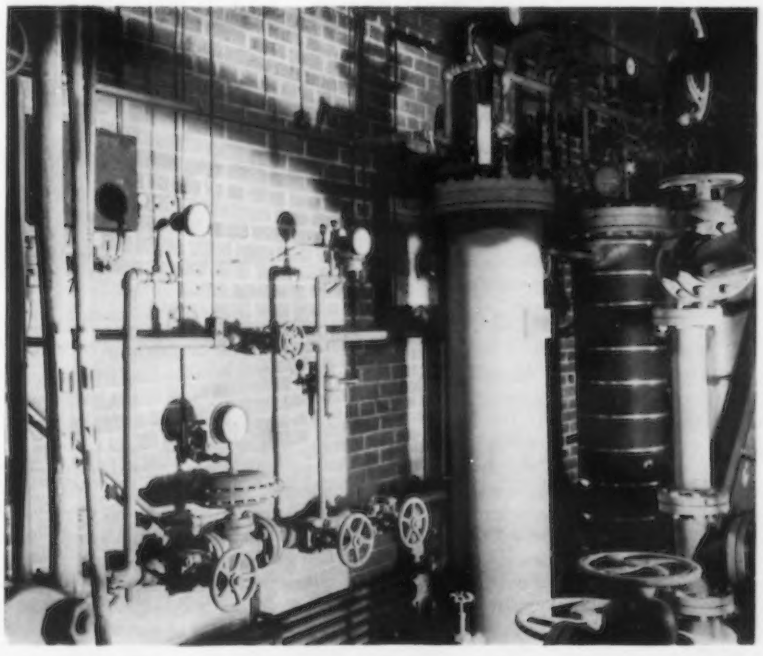
The air pressure, in turn, is precisely maintained by a spring-type pressure regulator. This combination of air supply regulator and pressure balanced regulator has several advantages over a spring-loaded diaphragm control valve for chlorine. The combination responds more quickly and accurately and is less expensive. Since the air does not flow continuously and the volume remains nearly constant, the air supply regulator can react to changes in pressure more quickly than a spring-type diaphragm control valve for continuously flowing chlorine. Moreover, the spring in the air regulator is subjected to less cycles of flexing and therefore has a greater life expectancy. This combination is another example of sound engineering creating a less expensive industrial tool that is far better than anything available heretofore.

Specifications of Chlorine Pressure Regulator

This standard Honeywell regulator is constructed of special materials. The body is cast steel with a nominal rating of 300 p.s.i. The straight through body is double-seated with the adapter and bottom cap piloted into the body and fully gasketed. Its springless, double-diaphragm construction eliminates the



NORMALLY PRESSURE BALANCED REGULATORS are installed with the actuator below the body, but for chlorine installations the diaphragm is mounted upright to prevent gummy condensibles from fouling the diaphragms.



TO MAINTAIN EXACT CHLORINE PRESSURE and temperature, the liquid chlorine is vaporized by the units on the right and the pressure is automatically controlled by the Honeywell pressure balanced regulator at left center.

need for a stem seal and thereby results in nearly frictionless operation. The double diaphragms enclose a vented air space to guard against possible leakage of chlorine to the supply pressure regulator.

Because of the corrosiveness of chlorine, body trim is a high alloy, austenetic stainless steel Durimet 20*. Also, the lower diaphragm is protected by a Teflon† sheet 1/32 inches thick. The diaphragm material is very flexible rubber sheet stock ⅛ inches thick with a one ply cotton insert. Finally, double bolting is used to assure a tight seal at the operating pressures used.

Results From a Pressure Balanced Regulator

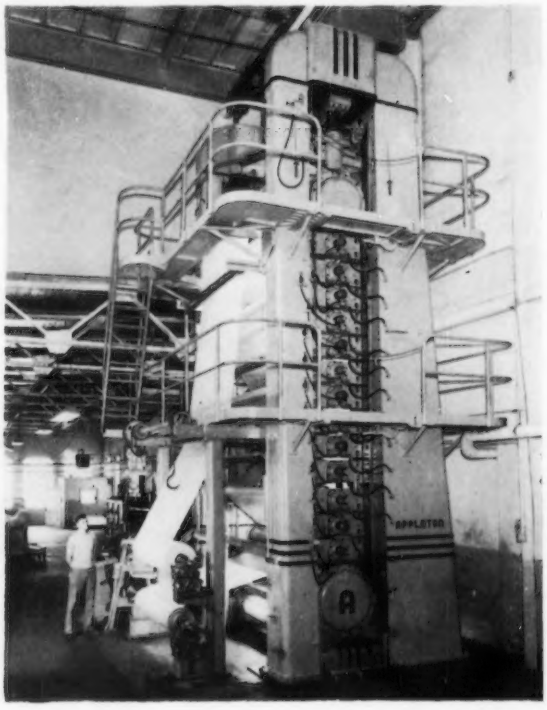
Chart sections from a 30-day graph of a Tel-O-Set pressure recorder clearly illustrate one of the most significant ad antages of the pressure balanced regulator. No matter how the input pressure (top graph) varies, the controlled output pressure stays right at 50 p.s.i.g. and does not drift. Even the extreme fluctuations in input pressure when tank cars are switched, have no significant effect on the output pressure. On the other hand, the output from our former regulator had a tendency to vary with input pressure.

A second advantage of this regulator is its simplicity—its design eliminates the need for stem packing. Our former regulator required some service every two weeks besides frequent packing to prevent leaks of the corrosive gas. The present regulator has not required any service since it was installed in November, 1954.

Third, this regulator is corrosion resistant while the stem on the former regulator was constantly corroding.

Camp believes that this is the most efficient method developed thus far for controlling chlorine gas pressure and providing more uniform chlorination of stock. The pressure balanced regulator in combination with an air pressure regulator (Kendall No. 10) fills a gap in the modern instrumentation of pulp bleach plants.

Nicolet Installs Glassine Supercalender Of Advanced Design



Reporting to *Paper Trade* JOURNAL, Herbert Wenberg, assistant general manager of Nicolet Paper Corp., advises that his company has lately installed in the West De Pere, Wis. mill, a new glassine supercalender incorporating the very latest in design improvements.

Explaining the details of the machine, Mr. Wenberg reports as follows:

"This supercalender was designed and built by the Appleton Machine Co. It may be operated either as a 16 roll or a 15 roll supercalender. The face of the rolls are 84 inches in width, this width being chosen so that the entire width of paper from the No. two paper machine can be supercalendered at one time.

"The overall height of the supercalender is 28 feet. The total weight is about one hundred tons. In order to adequately support this weight, the foundation goes down about 26 feet to bed rock.

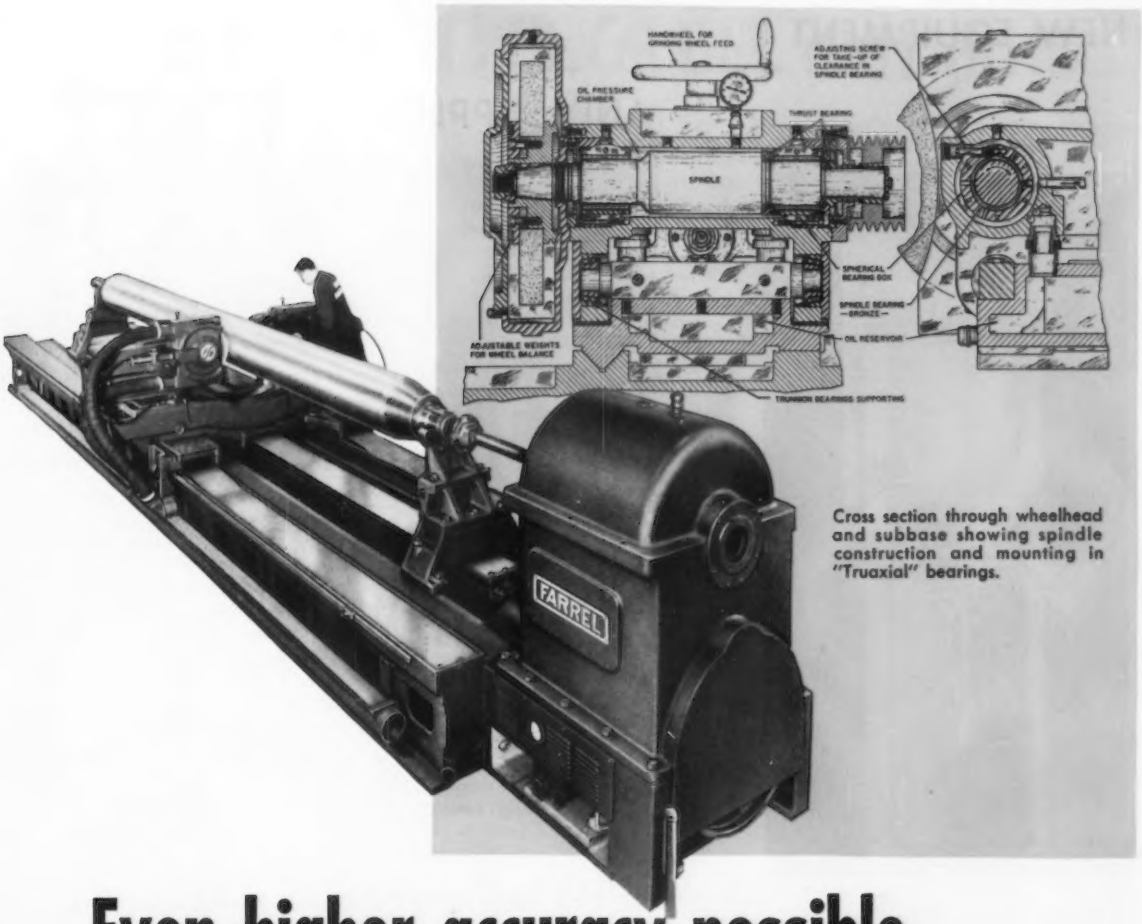
"The top roll has a diameter of 30 inches, and weighs approximately 15 tons including its bearings. The bottom roll is 36 inches in diameter, and weight is about 19 tons including bearings. The paper filled rolls were completely manufactured and filled in the calender roll department of Nicolet Paper Corp.

"All rolls are equipped with either Torrington or SKF spherical roller bearings. Both the unwind and the rewind shafts are Appleton expandable shafts. The tension on the unwind shaft is governed by Monkley friction. The steam pressure on the intermediate steam rolls is regulated by a Swartwout pressure control.

"The downward pressure applied at the top of the supercalender, creating the desired nip pressures, is by oil pressure controlled by a Denison hydraulic system.

"The Westinghouse drive consists of an a.c. d.c. motor generator set and a d.c. motor driving the bottom roll through a gear reducer. The a.c., motor is 300 h.p., while the d.c. motor is 250 h.p.

"Threading speed is about 50 feet per minute. Operating speed can be varied from 200 feet to 1000 feet per minute. The supercalender is designed to have a maximum nip pressure of 2500 pounds per linear inch at 1000 f.p.m., or 4000 pounds per linear inch at 500 f.p.m. The speed, horse power, and pressure are all constantly recorded on 24 hour charts."



Cross section through wheelhead and subbase showing spindle construction and mounting in "Truaxial" bearings.

Even higher accuracy possible with improved swing-rest grinder

Long recognized as the most accurate machine for grinding paper-mill rolls, the Farrel two-wheel swing-rest roll grinder has been redesigned to deliver even higher accuracy.

Look, for example, at the spindle design. The spindles are of large diameter in relation to their length to assure necessary rigidity under working load. They are mounted in Farrel "Truaxial" bearings, which offer many benefits over previous designs for smooth, vibrationless operation, faster and better finishing, ease of adjustment, positive lubrication and economy of maintenance.

Split, self-aligning pillow blocks provide positive alignment of the spindle in its bearings. Adjustment of running clearance is accomplished through adjusting screws. Contracting pressure of the pillow block on the supporting points of the bearing creates the effect of five individual bearing shoes, plus a self-energized, high-pressure wedge of oil entering each of the five bearing areas, yet retaining the smooth, unbroken surface and rigidity of a full sleeve bearing.

Spindle end thrust is taken by hardened steel thrust collars located at the pulley end of the spindle. Grinding wheels and drive pulleys are end-mounted, permitting change of wheels and V-belts without disturbing either spindles or bearings.

For full details of this and other features of the machine, write for bulletin 119.

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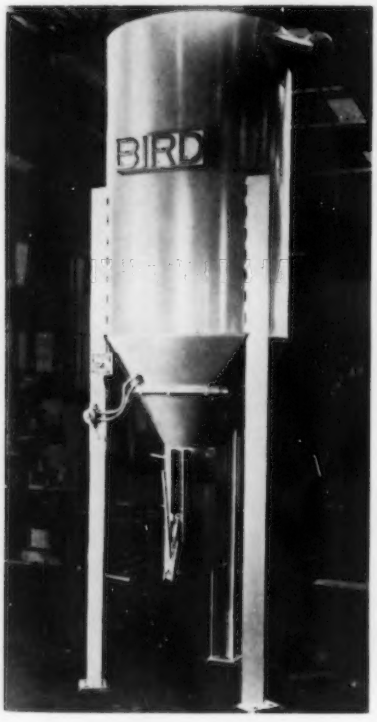


Stock Cleaned Faster By New Unit

The Centriffler, manufactured by Bird Machine Co., South Walpole, Mass., is a new dirt removal unit which takes stock from the pulpers diluted to about 1½ percent, and removes all harmful foreign matter before it is broken up, preventing considerable damage to machinery, wires and equipment.

The cleaner unit combines centrifugal and riffler action to effect the separation of dirt and stock in less time and space than older models. The product has no moving parts. Stock is delivered tangentially by a low head pump to an inlet at the top of the unit. Cleaned stock flows from an outlet also at the top, while separated junk and dirt settles in the sump at the base where it may be removed periodically.

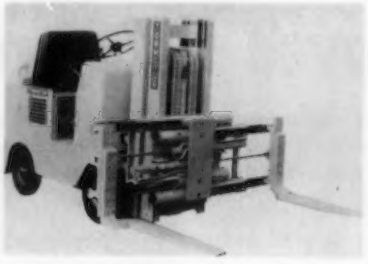
Capacity of a single Centriffler is rated at approximately 1500 g.p.m., depending to some extent on the amount of foreign matter present in the furnish.

Valve Connection Compensates for Misalignment

Jerguson Gage & Valve Co., 80 Fellsway, Somerville 45, Mass., announces a new spherical union connection for valves which compensates for up to 10 degrees misalignment on vessel tappings, in any direction from perpendicular axis and a wide variety in centers.

When used with a side connected gage, the spherical union on the tank connection side of the valve alone will permit a variation of plus ⅜ in. to minus ⅜ in. per valve or a total of ¾ in. increase or decrease on centers. The product would thus allow a gage having side connections or 20 in. to be installed on tank centers anywhere from 19¼ in. to 20¾ in., using straight valves with spherical union tank connections. Use of connections is said also to take care of a tapped hole drilled at an angle instead of a true right angle to the mounting plane.

The spherical connection is claimed superior to the flat union in that a differential in expansion between a side connected gage and the tank on which it is mounted would cause the socket joint to move with a correspondingly slight angular change in the threaded nipples between the valves and the side connections. There would have to be a definite distortion of parts in the case of the flat union, the manufacturer points out, to compensate for a similar differential which might create a leakage problem.



Truck Attachment Provides Versatile Operation

Fork lift trucks can be made more versatile with a new hydraulic clamp and offset fork attachment now being manufactured by Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.

The accessory consists of twin forks mounted on horizontal steel tracks at the front end of the truck. Hydraulic cylinders allow the width of the forks to be adjusted for pallet handling of various widths. The attachment is particularly suited to operations where a lift truck must be used interchangeably as a clamp truck and a fork lift truck.

Measuring Unit Tests Printing Smoothness

An instrument for the accurate measuring of printing smoothness, and which is being made commercially available for the first time, is the product of Allegany Instrument Co., 1000 Old Town Rd., Cumberland, Md. Developed through years of research, the product was only released commercially after complete tests were performed under operating conditions at a paper mill where a few of the products are already in use.

Called Model 55 Chapman Printing Smoothness Tester, the unit measures the smoothness of printing stock by a principle originally conceived by S. M. Chapman at the Pulp and Paper Research Institute of Canada.

While the specimen is under a compressive load which corresponds to the platen pressure of a printing press, the instrument electronically measures the areas of the specimen that are in optical contact with a glass prism and automatically presents the reading on an easily read dial as a Chapman "F" value. The instrument is calibrated quickly and easily with any piece of printing stock. The average operating time for one reading of a specimen is 40 seconds.

The most far-reaching feature of this instrument is that it will permit standard measurements of printing smoothness that are positively correlated between instruments, regardless of the distance between instrument locations. Any number of these instruments will repeatedly reproduce readings of a paper sample within 2%. Moreover, the reliable measurements the instrument provides are obtained without high overhead rates. In most cases, depending on methods presently employed, its use will actually lower overhead rates. The use of non-skilled operators, the fast operating speed and the trouble-free operation of the instrument all contribute to such cost reduction.

Look what COLOR can do

Cure the common cold? Well, we won't claim *that*. Appealing as colored tissues are, they aren't medicine. But color — the right colors — can help sell your paper products faster.

Our technical staff will be glad to help you find the right shades and the most economical formulations for the paper products you sell. You'll see how much faster they move off the shelves! Don't be left behind in the trend to colored paper products. Write E. I. du Pont de Nemours & Co. (Inc.), Dyes & Chemicals Div., Wilmington 98, Del.

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Color sells more . . . for your customers and you

Level Indicator for High Bin Temperatures

An improved type material level indicator for process industries is now offered by the Fuller Co., Catasauqua, Pa. Known as the Material-Level Indicator, the device will function positively at bin temperature up to 300°F, and is claimed suitable for all dry, pulverized, fine, crushed or granular materials. It can also be adapted for use with corrosive materials, with all exposed parts built of stainless steel.

The indicator may be mounted either vertically or horizontally. A maximum paddle shaft extension of 10 to 12 ft. is recommended for the vertical unit; where indication is desired below this depth, the indicator should be installed horizontally. There is no danger of flowing material interfering with the mechanism or the motor.

The indicator mechanism consists of a paddle wheel rotated by a 10-watt electric motor. When incoming material reaches the level of the paddle wheel, shaft movement is restrained. The motor, located externally, revolves on its shaft until it contacts two micro switches, which flash a signal either to the operator or directly to the feed supply. Because the motor frame must rotate through a considerable distance before it contacts the switches, false signaling caused by clumps of material striking the paddles is avoided.

Even when the paddle is being held stationary by the material, electric current to the motor is not interrupted.

For low-level conrol, when a bin is being unloaded, the paddle wheel is held motionless, and the motor is held against the switches until the material restraining it falls away. A tension spring then returns the motor to its original position and the paddle revolves. The micro switches can control numerous combinations of circuits for shutting off material flow.

Available for 110-220 volts, at 25, 50, 60 cycles, the single-phase motor is mounted against a friction clutch plate located outside of the bin. The motor shaft is joined to the paddle shaft with a universal joint, protected by a tubular housing, which is built of flexible material when a shaft longer than eight feet is required.

Improved Truck Facilitates Bulk Material Handling

A new and larger materials handling Traxcavator model is announced by Caterpillar Tractor Co., Peoria, Ill. The advanced design includes such features as 40 degree bucket tip-back at ground level, good, horsepower-to-weight ratio, an advanced hydraulic system, larger lifting capacity, better balance and stability, improved operator visibility, faster response to controls, in-seat starting, and oil flywheel clutch.

Utilizing a 2¼ cubic yard bucket, Model 977 features a differential lever on each of the lift arms which makes possible the 40 degree bucket tip back at ground level. This feature allows the bucket to retain heaped loads even in loose materials. Lower cycle time is attained since the bucket can be driven into a stockpile, tipped back and a full load obtained in one pass without declutching. Horizontal tractor push and upward hydraulic thrust can be accomplished simultaneously for better breakout action.

The bucket can be alternately tipped and leveled while pushing to help work its way into the material and heaped loads can be obtained at the ground line. The tip-back action also improves stability since the center of gravity of the loaded bucket moves back towards the tractor as the bucket is tipped back. The ability to carry the load in a low position keeps the center of gravity closer to the tractor.

In addition to an automatic kickout on the lift valve, No. 977 has an automatic bucket positioner on the bucket tip valve. This device allows the operator to move the lever into tip-back position and then release it. The lever will automatically move to "hold" position when the bucket reaches digging position and the operator's hands are left free to work gear shift and steering controls. This positioner is adjustable to give any desired bucket digging angle. Two automatic kickouts were designed to provide decreased cycle time.

The No. 977 is equipped with an oil-type flywheel clutch. This feature provides a clutch that seldom requires adjustment, has an extremely long life and decreases flywheel clutch lever pull. It may be removed without disturbing the engine or transmission. Forward speeds up to 651 feet per minute and reverse speeds up to 616 feet per minute can be obtained. Overall dimensions of the product are: length 17′; width 8′; height 7′ 3¾″; ground clearance 1′ 4½″.

Truck Attachments Feature Safety, Handling Ease

Two accessories for fork lift trucks, which provide greater protection to operators, are now available from Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio. One of the attachments is an overhead guard which is designed to shield the driver from materials which may fall from unwieldy loads being transported or high stacked, and the other is a carton clamp. This latter unit is a hydraulically operated device which easily and safely handles multi-unit loads and also assures maximum utilization of yard storage space. The carton clamp eliminates the need for pallets. Its arms are rubber covered for added protection to the load. Pivot mounting facilities pick-up. A simplified suspension of the clamping mechanism and couplings which are easily detached allow quick removal of the unit should the unit be needed for standard fork lift operations.

It will speed the reply to your inquiry to mention Paper Trade Journal.

Scales Incorporate New Design Features

Exclusive features incorporated in new Floaxial cabinet dial scales, produced by Fairbanks, Morse & Co., Chicago 5, Ill., include a direct reading dial, a full swivel head, cage-type central column construction and a controlled-speed dash pot.

The direct reading dial makes it possible for the weighmen to utilize drop weights and still read the total net weight at the tip of the dial indicator. This speeds up weighing and eliminates errors since it does away with the need to add the weight obtained from a drop weight window to a second weight shown at the tip of the dial indicator.

The tare assembly has been redesigned in the scale to insure accurate operation. Rustless metal poises have open faces that leave fully exposed all graduations and figures etched on the chrome-plated stainless steel bar. At the center of each poise is a large turquoise Vee that ends in a sharp red tip, attracting the operator's eye and precisely indicating the weight graduation.

A differential mechanism built into the Floaxial dial scale between the cabinet and the head permits full 360° swiveling of the head at a touch of the hand. The head can be locked in position or left to rotate as desired.

Carton Tape Is Applied Easily

A pressure sensitive tape, designed for industrial sealing applications which require a strong adhesive to keep out dust, water, wind and foreign particles, is announced by the Behr-Manning Division of the Norton Co., Troy, N. Y. The tape is claimed suitable for assembly line sealing of cartons, containers and fiber tubes during storage and shipment.

Supplied in rolls, the tape unwinds easily and grips the surface applied with little pressure. The product resists break-off during application yet can be torn cross-wise easily without the use of a knife. Once in place, the product does not lift or curl.

The product is designated as No. 186 Behr-Cat Black Sealer. It has an adhesion of 42 oz. per inch of width. A black crepe paper backing is 10 mils thick and has a tensile strength of 19 lbs. Rolls are 60 yards long in standard widths from ¼ in. to 3 in. Other sizes are available on special order.

OBITUARIES

Francis Kiefer, 68, vice-president of the Port Huron Sulphite & Paper Co., Port Huron, Mich., died of a heart attack February 3 while being rushed to a hospital. Mr. Kiefer, graduate of the forestry department of Michigan State University in 1908, joined Port Huron in 1932 as purchasing agent, and became president of the firm May 25, 1947, when his brother, E. W. Kiefer, then president, became president of the board. He resigned the presidency January 26, 1953, and Norman O. Seagrave succeeded him. He remained as vice-president.

Gerald H. Deacon, retired executive of the Kieckhefer Container Corp., Delair, N. J., died February 9 at his home in Wynnewood, Pa. He was 67.

Isidor F. Stein, president of the Yorkville Paper Co., New York City, died February 9 at his home, 124 West Seventy-ninth Street, after a short illness. Mr. Stein was 81 years old.

He was also president of two affiliates of Yorkville, the Safeway Products Company, which converts transparent packaging paper, and the Eastape and labels and gum tapes. He was a past president of the Metropolitan Bag and Paper Distributors Association, Inc.

Rudolf Unfug, an architect-engineer for Rust Engineering Co. during the past 36 years, died February 1 at Garfield Memorial Hospital in Washington, D. C. He was the company's second oldest active employee in years of service.

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To Be Honored At Syracuse Luncheon

Here are the members of the 1931 pulp and paper class who are to be honored this week at the 22nd annual pulp and paper alumni luncheon of the State University of New York College of Forestry.

ARNOLD H. ANDERSEN

"Andy" signed up with the Individual Drinking Cup Company in Easton, Pennsylvania in June 1931 and has been there since.

He started as Paper Supervisor and moved up to Laboratory Director in 1934. In 1950 he was transferred to the Central Planning Department as Supervisor over the group planning all company production schedules. In 1954 he was promoted to Manager of Service Departments including Quality, Art, Laboratory, Traffic, Planning and Waste Control.

Andy married his college sweetheart, Genevieve Crossley, in 1932.

FERRI CASCIANI

"Cash" is another member of the class who's stayed "put." He joined Niagara Alkali in 1932 and until 1946 was largely engaged in technical sales service in the fields of pulp bleaching and other uses of chlorine and alkali.

Since 1946 he has been in charge of the research laboratory, investigating plant processes and products and developing new products.

Married in 1931 to Clarice Gentile, Cash has two sons, Jerome, 19, and Roger, 13. Says he has lots of hobbies, but not much time.

C. IVES GEHRING

Ives was employed by the Oswego Falls—Sealright Co. Inc., Fulton, New York, immediately after graduation. He will be a twenty-five year man this spring, having served in the successive positions of Chemist, Assistant Superintendent, Superintendent and now Manager of the Pulp and Paper Division of the company. He is a past Divisional Chairman of the Superintendents' Association and has served many times on committees or given papers to both TAPPI and the Superintendents. He is Chairman of the Sylinder Board Section for the National Superintendents' Convention being held at Lake Placid this June. He is a past President of the Foresty College Alumni Associaiton. He and his very lovely wife, "Dottie," have three sons, two daughters-in-law, two grandsons and two grand-daughters.

IRVING H. ISENBERG

Irv graduated with the Class of 1931 with a degree in Wood Technology-Chemistry. He stayed at Syracuse one additional year for a Master's degree in the same subject. Then, following Greeley's (and other's) advice, he went west, specifically to Berkeley, California, where he worked several years part-time with the U.S. Forest Service and also earned a Ph.D. degree in plant biochemistry at the University of California.

In 1937 he entered the employ of the Institute of Paper Chemistry, where he is research associate and group leader in wood technology. He has taught the "Bush Course" and Wood Anatomy since 1938 and Fiber Microscopy since 1946. In 1941 Irv married an Appleton girl, Doris Koehnke. They have three children: William, 12; Ilene, 5; and John, 3 years old.

LESLIE JUSTICE

Les started with Container Corp. of America in 1931 as Mill Chemist and later Chief Chemist. In 1935 he patented a new type of beater and applied for patents on a new type of Jordan. He was with the Glassine Paper Company, Conshohocken, Pa., from 1936 to 1939 as chemist and consultant. He became Assistant Superintendent of the Gloucester mill of the Ruberoid Company in 1939-1940 and subsequently Assistant Superintendent and Superintendent for the Empire Box Corporation. In 1945 he joined the Fort Orange Paper Company as Mill Superintendent and continues in that capacity. In 1955 The Fort Orange Paper Co. merged with the Sutherland Paper Co.

He was married in 1936 and has two children, Bob (6'3") a predental student at the University of Michigan, and a daughter, Judy, in Junior High School.

He has been very active in School Board work, Boy Scouts and Kiwanis.

LIONEL M. SUTHERLAND

"Lon" joined D. Manson Sutherland, Consulting Engineer, in 1931. He was employed by the Sloane-Blabon Corp. as a trainee in 1934 and eventually became Foreman of the Battleship Linoleum Department. In 1939, he joined the Sutherland Refiner Corporation. Then came a stretch with the United States Army from September 1940 to April 1946. He rejoined the Sutherland Refiner Corp. after the war, becoming President in 1955.

Lon has been occupied with engineering, designs, sales and service of pulp refining equipment.

He married Margaretta Zeller in 1936. They have no children. His hobbies—gardening and golf.

FRANK MAKARA

Frank attended the College of Forestry from 1926 to 1929 and again in 1930 to 1931, after spending a year in College of The City of New York as a chemical engineering student. The University of Idaho granted him a M.S. degree in 1932. He studied the chemistry of cellulose and lignin at McGill University in 1932-1933 and received his Ph.D. from Columbia University in 1937. During 1935-1936 he was a paper chemist with the Chicago Paper Testing Laboratories and in 1937 was employed as Director of Research for the Bird-Archer Company in Chicago. During 1941-1943 he was employed by Sylvania Electric Products Company. In 1943 he studied law at Syracuse University College of Law, transferring in 1944 to Fordham University Law School where he received his LL.B. degree in 1946.

He is a member of the New York State Bar and the United States Supreme Court at Washington, D.C. He has had his own Patent Law practice since 1948 with an office in the Woolworth Building.

He is married and has a two year old son.

E. P. McGINN

For the past four years Pat has been Technical Service Supervisor of the Paper Division, Sandoz Chemical Works, manufacturers of dyes and other synthetic organic chemicals. Before joining the Sandoz staff, he was Industrial Editor of *Paper Trade JOURNAL*; Sales-Service Engineer for Sutherland Refiner Corporation; and Chief Chemist of the Paper Chemicals Division of Nopco Chemical Company.

For about ten years prior to these affiliations with suppliers to the Paper Industry, Pat was associated with several pulp and paper mills as chemist and color foreman. These mills were: Minnesota and Ontario Paper Co.; Champion Paper and Fibre Co.; St. Regis Paper Co.; Foster Paper Co.

CARL T. WELTE

Carl received his M.S. degree from the college in 1933. After short periods of employment as a chemist with Hammermill Paper Company, Dexter Sulphite Pulp and Paper Company, and Brownville Board Company, he went south in 1933 to the Canton, North Carolina, mill of The Champion Paper & Fibre Company. With Champion he has had well diversified experience as paper technologist, paper inspector, sales service man, pulp and converting paper salesman, chief inspector, technical assistant to general superintendent, assistant general superintendent, and assistant prodution manager. Since July 1, 1955, he has been production manager of Champion's Carolina Division. He has been Chairman of the Southeastern Division of the Superintendents' Association.

He married Roberta Grayson Reveley of Canton, North Carolina, and Lexington, Virginia, in 1936. The Welte family consists of four girls and a boy, ranging in age from 16 to 4 years.

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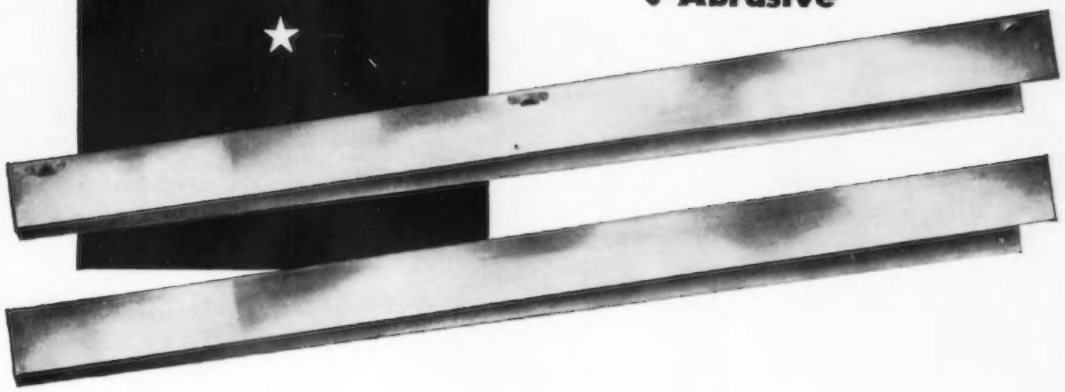

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Buffalo Rubber & Supply Inc.
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Pulp & Paper Mill
Accessories Ltd.
P.O. Box 903, Station "O"
Montreal 9, Canada

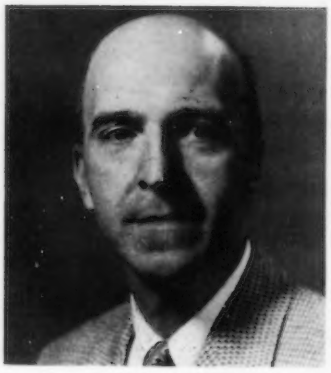
E. & M. Lamort Fils
Vitry-le-Francois
(Marne) France

LODDING ENGINEERING CORPORATION

WORCESTER, MASSACHUSETTS

LAURENCE M. WOODSIDE

Larry was employed by the International Paper Co. in Niagara Falls, N.Y., for five years; then, in 1936, he joined the Albany Felt Co. as a Service Engineer. He is now Chief Engineer, Technical Field Service. In 1938 he married Marie Van Cleft, and they now have one son, Robert, 14 years of age.

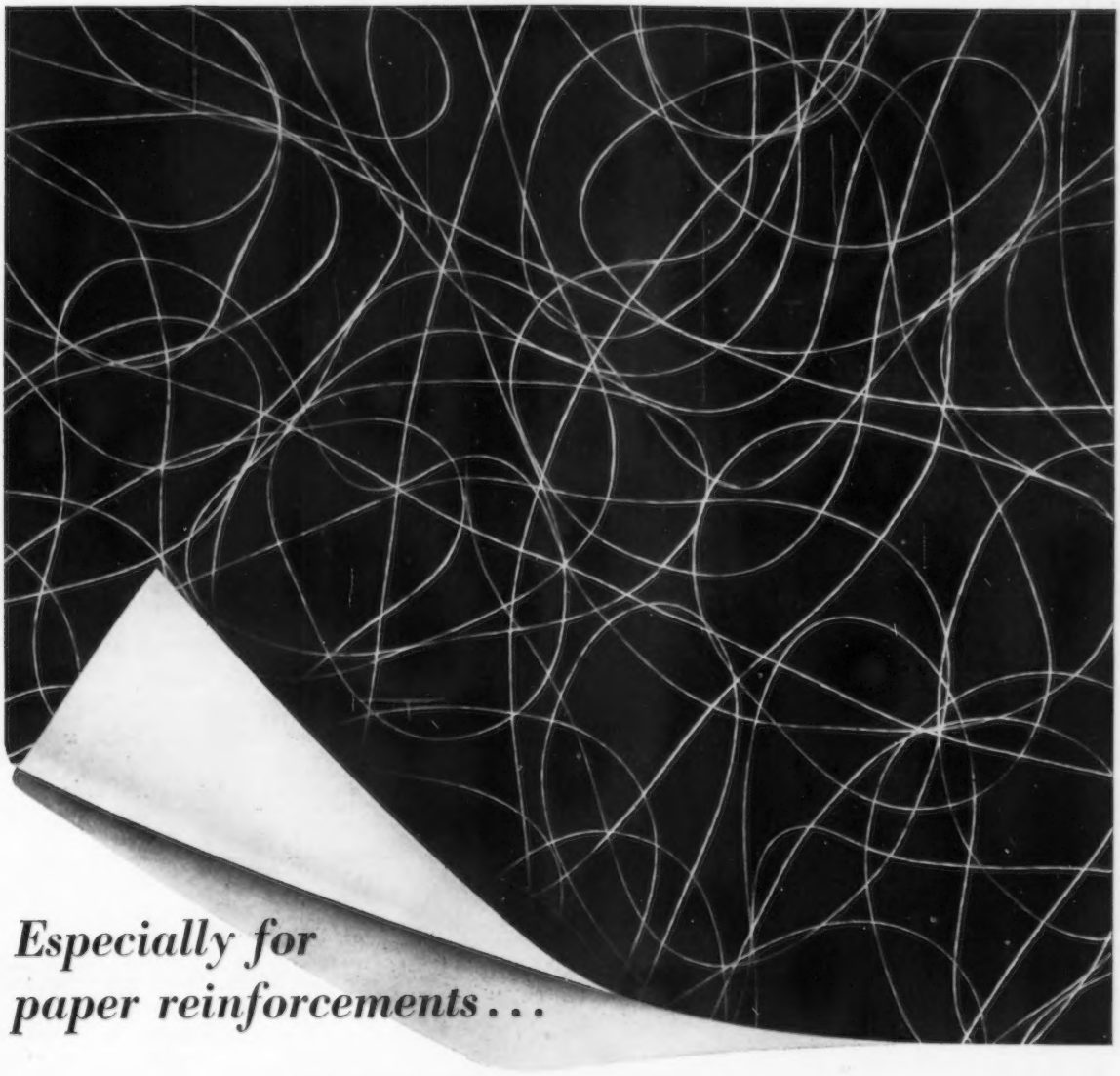


SHELDON J. YOUNG

Sheldon started working with the United States Testing Co., Hoboken, N.J. in their paper laboratory. This job was a "depression casualty", so he moved north to Carthage, N.Y. with Crown Zellerbach Corp. Here he helped "Pat" McGinn start the organization which became the Empire State Section of TAPPI. He was married in 1940 to the former Elizabeth Miller, Syracuse Fine Arts '33. They have no children. Sheldon served 19 months with the Chemical Warfare Service stationed at Camp Sibert, Ala., and in the Marrianas (Saipan Island). Currently he is Technical Director, Crown Zellerbach Corp., Carthage, N.Y.

Class of '31 in 1931

Class of 1931—L.R.: F. Casciani, L. Justice, L. M. Woodside, S. J. Young, E. P. McGinn, C. I. Gehring, L. M. Sutherland



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Pittsburgh's newest reinforcing fiber glass yarn is tailor-made for paper products. This PPG 7115 yarn provides smoother manufacturing, lower fuzz for such reinforced paper products as laminated sheets, manufacturer's joint tape and pressure sensitive tape.

Important too, Pittsburgh Fiber Glass Yarn reinforcements give better flexibility to finished sheets than any other type of reinforcements.

For complete information on the complete line of PPG Fiber Glass reinforcements, and arrangements for "in your plant" tests, contact our executive offices or our district sales offices in Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia or St. Louis. Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Pennsylvania.

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cml. bags, c.l. wks. .....cwt.	$1.85	/ —
iron-free, c.l. wks. .....cwt.	3.55	/ —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)...	32.00	/34.00
Arg. ex. dock, duty paid.....	28.00	/29.00
New Zeal., do.	34.00	/35.00
Caustic soda:		
c.l. wks. solid, 76%.....cwt.	4.20	/ —
flak. & grd. 400-lb. drums, c.l.	4.50	/ —
liquid 50% tanks ..	2.80	/ —
liquid 70% tanks....	2.90	/ —
China clay:		
dom. air-float. c.l. wks. ..ton	10.00	
water washed. lump. filler..ton	11.00	
coating ....ton	17.60	/40.00
Imported, ex. ship short tons	20.00	/35.00
Chlorine:		
single-unit tanks, works..cwt.	3.05	/ —
multiple unit. 2-5 cars per yr.	3.92	/ 5.12
Formaldehyde:		
USP, inh. dms. c.l. wks..lbs.	.0675	/ —
lcl., E. wks. .....lb.	.072	/.0725
Lime:		
hydrated bags, wks.....tons	18.71	/20.21
Gum rosin:		
K, M, N, drms, c.l. Savan, cwt.	8.45	/ 8.88
Rosin size:		
70%, gum & pale grds., tank cars, south. sh. pt..... cwt.	7.24	/ 7.28
Salt cake:		
dom. bulk, 100% anh. wks. ton	28.00	/ —
imp. f.o.b. Saskatchewan..ton	18.00	/ {Cana. funds
Soda ash:		
light, 58%, bags, wks.....cwt.	1.75	/ 1.80
bulk ....cwt.	1.45	/ 1.50
Sodium silicate, 40° Be.:		
tank-cars, wks.....cwt.	1.00	/ —
drums, c.l. wks.....cwt.	1.35	/ —
(47°) Be. WW.		
tank-cars, wks.....cwt.	1.60	/ —
drums, c.l. wks.....cwt.	1.95	/ —
Sodium peroxide:		
dms. c.l. E. of Miss. .....lb.	.186	
l.c.l. do. .....lb.	.191	/ .196
Soybean, protein:		
chem. isol., wks. c.l. bags...lb.	.23	/ —
Sulphuric acid:		
60° Be. chys. c.l. wks....cwt.	2.00	/ —
l.c.l. wks.. ..... cwt.	2.45	/ —
tank-cars, wks..... ....ton	18.60	/ —
Sulphur:		
crude, c.l. mines, contract, long ton	26.50	/ —
f.o.b. vessels Gulf.....do.	31.00	/33.00
Sulphur dioxide:		
liquid, coml. cyl., wks.....lb.	.10	/ .12
multi-unit cars .. ..lb.	.0535	/
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl .....cwt.	6.39	/ —
white, dextrins .....cwt.	7.55	/ 7.80
chlorinated .....cwt.	8.15	/ —
potato, Idaho, c.l. wks....cwt.	6.00	/ —
East, fr. all. 50 cents cwt.		
potato, Maine f.o.b. wks. cwt.	5.75	/ —
Talc:		
domestic, sacks, c.l. wks., N.Y. .....ton	27.00	/32.00
Titanium dioxide:		
anstase, c.l. deld. E, bags..lb.	.22½	/ —
l.c.l. deld .....lb.	.23½	/ —
rutile, c.l. deld. .....lb.	.24½	/ —
l.c.l. deld. .....lb.	.25½	/ —

PRICES OF FIBERS

MARKET WOOD PULP

First Quarter Contract Prices Per Short Air-Dry Ton

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$83.00/ 86.00§	§$83.00/ 88.00§	§$77.50/ 90.00
Kraft, Blchd.	147.00/152.00	150.00/155.00	§147.50/150.00§		§150.00/ —
Kraft, Blchd. Hdwd.	145.00/ —		§137.50/ —		
Kraft, Semi-bleached	135.00/140.00	135.00/140.00	§137.50/140.00§	*140.00/ —	
Kraft, Unbl.	115.50/125.00*	115.00/125.00	†120.00/130.00	120.00/145.00	
Sulphite, Blchd. ..	145.00/150.00	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd. .	125.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis

PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.25/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.50
Blchd. & Unblchd. Underwears....	17.00/ 18.00
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.75/ 6.25
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.75
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	27.00/ —

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	Jan. 31 Per 100 lbs.
Grade 1 n.a.	
2} 1st cut—felting	$9.10/ $7.70
3} 1st cut—felting	7.00/ 5.80
4} 1st cut—felting	5.25/ 4.20
5} 1st cut—felting	3.75/ 3.05
5} 1st cut—felting	3.00/ 2.75
7} 1st cut—felting	2.75/ —

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Foreign Scrap Burlap	5.00/ 5.25
Heavy Wool Tares	6.50/ —
Austr. Wool Pouches	5.75/ —
Domestic Manila Rope	7.75/ 8.25
Domestic No. 1 Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York Feb. 13	Boston Feb. 13	Chicago Feb. 13	Los Angeles Feb. 13
No. 1 Mixed Paper	$16.00/ 18.00	18.00/ —	17.00/ —	14.90/ —
No. 1 News	27.00/ —	24.00/ 25.00	22.00/ —	14.00/ —
Overissue News	27.00/ 29.00	24.00/ 26.00	27.00/ —	14.00/ —
Mill Wrappers	25.00/ 28.00	22.00/ 26.00	20.00/ —	14.00/ —
Old Corrugated Containers	24.00/ 27.00	23.00/ 24.00	30.00/ —	19.00/ —
Super Resorted Kraft Paper ...	40.00/ 50.00	45.00/ 50.00	40.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	35.00/ 42.50	40.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 52.50	45.00/ 52.50	45.00/ 52.50	— / —
New 100% Kraft Corr. Cuts ...	55.00/ 65.00	55.00/ 65.00	75.00/ —	45.00/ —
New Br. Kraft Env. Cuts	85.00/ 95.00	85.00/ 95.00	80.00/ —	60.00/ —
New Br. Kr. Bag Waste Prntd	60.00/ 70.00	60.00/ 70.00	70.00/ —	55.00/ —
New Br. Kr. Bag Waste Unprrtd	75.00/ 80.00	80.00/ 90.00	85.00/ —	— / —
No. 1 Groundwood Shvs.	45.00/ 50.00	32.00/ 35.00	40.00/ —	27.00/ 30.00
White Newsblanks	80.00/ 82.50	65.00/ 75.00	65.00/ —	65.00/ —
No. 1 Soft White Shvs.	85.00/ 90.00	80.00/ 85.00	80.00/ —	— / —
Hd. Wht. Shvs.	115.00/120.00	115.00/125.00	120.00/ —	105.00/ —
Hd. Wht. Env. Cuts	135.00/145.00	135.00/145.00	120.00/ —	120.00/ —
Col. Tab. Cards	75.00/ 80.00	75.00/ 77.00	65.00/ —	44.00/ —
Manila Tab. Cards, bales	100.00/105.00	95.00/103.00	100.00/ —	79.00/ —
No. 1 Col. Ledger	45.00/ 50.00	45.00/ 50.00	50.00/ —	35.00/ —
White Ledger	75.00/ 80.00	70.00/ 75.00	70.00/ —	55.00/ —
Mixed Book & Mag.†	30.00/ 31.00	30.00/ —	27.50/ —	— / —
No. 1 Rep'd. Hvy. Books‡	35.00/ 40.00	33.00/ 35.00	40.00/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡Not to exceed 10% groundwood. § Deld.

NEWS OF SUPPLIERS

L. J. Valmore

• LOCKPORT FELT CO., Newfane, N. Y. and Starkville, Miss. has appointed Lawrence J. Valmore a technical service representative. He will serve under Richard S. Buckley, Director of Sales and Service.

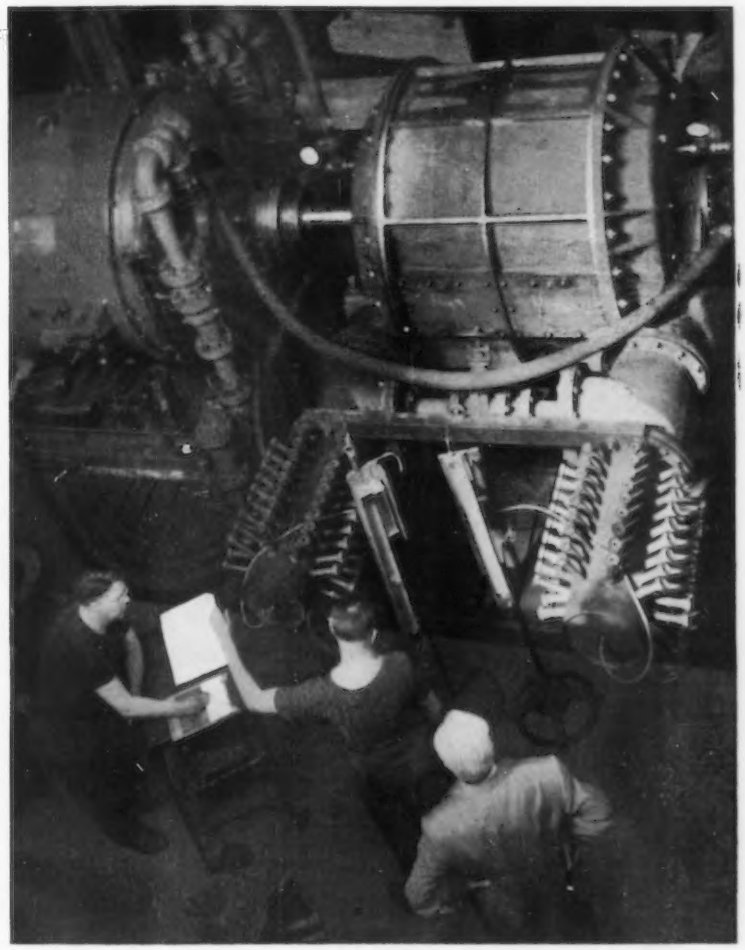
H. C. Goodrich

• RUST ENGINEERING CO. has elected Henry C. Goodrich vice-president.

Mr. Goodrich joined the Rust organization in 1946 as a structural engineer and later was project manager on a number of the company's major construction projects. He will now serve as vice-president in charge of sales and estimates for the Birmingham, Ala., office.

• GIBBS-BROWER CO., INC., 21 E. 40th St., New York 16, N.Y. announce that they are now located in their new offices at 10 Depot Plaza, White Plains, N.Y. The company has maintained offices in New York City for 58 years, and have served the paper and pulp mill and paper converting industries in connection with new, rebuilt and used equipment. They plan to continue and improve this association and service from their larger and more efficient quarters in the suburban area.

Rated performance of every Nash Vacuum Pump is assured by this precise laboratory test



Rated capacities of Nash Vacuum Pumps are not theoretical. Every Nash Pump is tested individually. Air capacity is determined by delivery thru accurately machined and calibrated orifices. Related vacuum is measured by precise mercury column, and horse power is recorded electro-dynamically. Records of these tests are retained by us, and certified copies are available to Nash Pump owners.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

440 WILSON ROAD, SO. NORWALK, CONN.

• YALE & TOWNE MFG. CO., has named Fred E. Rau, hoist equipment district sales manager in Cleveland, to the newly created post of assistant hoist sales manager.

• FAIRBANKS, MORSE & CO., has appointed C. G. Gehringer as manager of the Scale Division. He succeeds George C. Worthley who retired December 31st after a long and brilliant career of forty-one years with the company.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

THE RUST ENGINEERING CO.
PITTSBURGH 19, PA. • BIRMINGHAM 3, ALA.
Offices in Principal U.S. and Canadian Cities
Engineers Constructors
Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.
Surveys • Reports • Design
Construction • Modernization

PAYROLL PRESSURE?
try COST ACCOUNTING
your COUNTING COSTS
Then see how you can cut them 3 to 5 cents a ream with Stevens Automatic Sheet Counters and Pile Markers—Write for Bulletin No. 100—Or ask for a free demonstration in your mill.
stevens
CHARLES R. STEVENS, INC.
2017 SYLVANIA AVENUE
TOLEDO 13, OHIO

• HUNGERFORD & TERRY, INC. has appointed Clifford B. Armstrong, Jr., 1172 21st. St., Wyandotte, Mich., a sales representative.

• E. P. LAWSON CO., New York, has named Jim Willis midwest manager with headquarters at the firm's Chicago office, 628 S. Dearborn St.

• RAMSET FASTENING SYSTEM of Cleveland, Ohio, has been named sales agent for the Western Kiln Gun. The company, a part of Olin Mathieson Chemical Corp., will also service the gun. It formerly was sold and serviced by the Winchester-Western Division of Olin Mathieson in New Haven.

• MICHIGAN CHEMICAL CORP. has appointed Arthur K. Doig to its organic research staff at Saint Louis, Mich. Mr. Doig received his B.S. in 1944 from St. Lawrence Univ., Canton, N. Y. and his M.S. in 1949. He was associated with Shulton, Inc. for the past six years, carrying on organic synthesis research.

• LOCKPORT FELT CO.'s new plant at Starkville, Miss. announces that the first felt to be completely woven and finished in the new mill was ready for shipment in January, five and one-half months after the first machinery was installed. This was the first felt manufactured in the South.

Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Jan. 7	Jan. 14	Jan. 21	Jan. 28	Feb. 4
1956	95.2	100.7	100.3	99.4r	100.5
	Jan. 8	Jan. 15	Jan. 22	Jan. 29	Feb. 5
1955	89.7	94.6	95.3	94.9	96.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	93.6	96.6	97.9	98.0	99.3	97.4	85.5	96.2	93.8	101.6	100.6	91.3‡	94.9
1956	98.9‡												

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1949	1950	1951	1952	1953	1954	1955	1956
Year to Date	89.8	93.2	99.5	97.6	95.0	94.2	95.0	99.2
Year Average	83.7	95.8	98.0	88.6	92.3	91.6	94.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

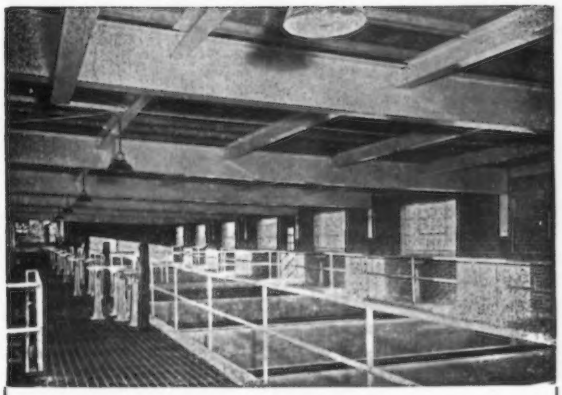
	Jan. 7	Jan. 14	Jan. 21	Jan. 28	Feb. 4
1956	92	103	101	102	101
	Jan. 8	Jan. 15	Jan. 22	Jan. 29	Feb. 5
1955	86	93	93	94	94

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	Year Avg
1955	92	95	96	94	97	97	84	99	97	102	101	92	96
1956	100												

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.
† Percents of operation based on "1nch-Hours" reported on a 6-day basis to the National Paperboard Association.

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING Feb. 4, 1956	LAST WEEK ENDING Jan. 28, 1956	CUMULATIVE TO DATE Jan. 28, 1956
% Activity	101%	102%	100%
	Tons	*Tons*	*Tons*
Total Production	291,570	296,802	1,359,480
Liner	99,305	99,862	470,493
Corrugating Material	46,472	48,537	219,906
Chip & Filler Board	4,652	6,079	24,814
Total Containerboard	150,429	154,478	715,213
Folding	54,171	51,810	245,259
Set-Up	13,654	15,039	63,680
Special Food Board	24,664	24,693	106,389
Other	48,652	50,782	228,939
Total Boxboard	141,141	142,324	644,267
Total Orders	*Tons*	*Tons*	
Received	405,935	258,781	
Unfilled End of Week	651,772	539,461	



Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

OTHER PRODUCTS

Demineralizing Plants
Water Softening Plants
Pressure Filter Plants

and

All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

Write for FREE Bulletins

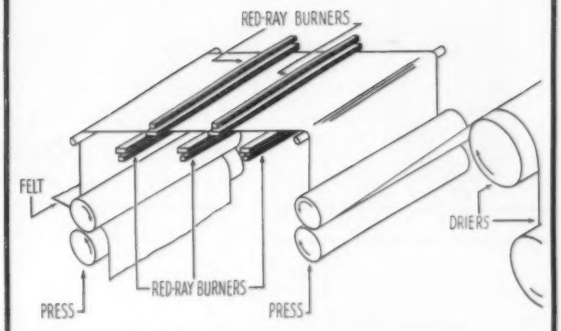
H&T SERVICE

HUNGERFORD & TERRY, INC.

CLAYTON 4, NEW JERSEY

HOT PRESS

Using RED-RAY Burners



Red-Ray Burners are economical.

Easy to install on existing equipment.

RED-RAY MFG. CO., INC.

318 CLIFF LANE, CLIFFSIDE PARK, N. J.

Tel: Cliffside 6-10000 (ten-thousand)

WESTVACO QUALITY

WEST VIRGINIA
PULP and PAPER COMPANY

Manufacturers of Printing and Converting Papers

SUPERCALENDERED • POSTER • BOND • COVER
LITHOGRAPH • LABEL • OFFSET • MUSIC • WRITING
EGGSHELL • INDEX BRISTOL • CUP AND CONTAINER
ENVELOPE • MIMEOGRAPH • FILE FOLDER • COATED
ENGLISH FINISH • POSTCARD • MACHINE COATED

KRAFT LINER BOARD • SEMI-CHEMICAL CORRUGATING BOARD
KRAFT CONVERTING AND KRAFT ENVELOPE

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

WEST VIRGINIA PULP and PAPER COMPANY

230 Park Avenue, New York 17, N. Y.

25 East Wacker Drive, Chicago 1, Ill. 503 Market St., San Francisco 5, Calif.

ELIXMAN
CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

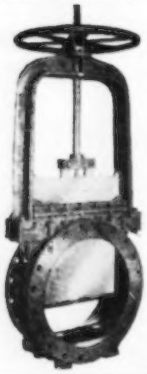
Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.



RECORD PAPER & PULP STOCK VALVES "BONNETLESS" SELF CLEARING---"RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- **The "FAST THREADED" screw stem and ball bearing speeds valve operation.**
- **The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.**
- **The yoke mountings are such that yokes for various methods of gate operation are interchangeable.**
- **Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.**

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS"

RECORD FOUNDRY & MACHINE COMPANY

LIVERMORE FALLS, MAINE, U. S. A.

PRICE & PIERCE LTD.

WOOD PULP

PAPER

LONDON
27 CLEMENTS LANE

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MONTREAL
SUN LIFE BLDG.

COMPLETE ENGINEERING AND CONSTRUCTION SERVICES FOR THE PULP AND PAPER INDUSTRY

If you have a problem involving any of the following, you can get immediate and experienced help from EBASCO engineers and consultants:

- **Design and Construction of Pulp and Paper Mills**
- **Steam and Hydro-Electric Power Plants**
- **Power Studies**
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For complete details on EBASCO'S various services send for "The Inside Story of Outside Help." Address Dept. 8, Two Rector Street, New York 6, N. Y.

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"EXCELSIOR" FELTS

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY
CAMDEN, MAINE

PAPER TRADE JOURNAL / CLEARING HOUSE

Help Wanted

POSITIONS OPEN

We can place—Supt. tissue paper converting plant; two board mill supts., one for board and coating combined; asst. supt. tissue, board and bond papers; supt. for polyethylene extrusion laminating operations, West Coast.

Cylinder and Fourdrinier machine foremen; supervisor envelope mfg.; foreman paper laminating and slitting; chemists and chemical engineers; chief industrial engineer.

Master Mechanics, power plant engineers, designers and draftsmen; paper salesmen, also salesmen for machy., chemicals and felts; machine tenders and back tenders; plant foreman tissue paper converting plant.

SEND US YOUR RESUME. Many attractive positions are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.
Phone: Liberty 2-6547
294 Washington St., Boston 8, Mass.
F-20

CHEMICAL ENGINEER OR CHEMIST

Ch.E., M.S. or Ph.D. Degree
0-5 years' experience

For research in paper coatings, extrusion, lamination, etc. leading to the development of new packaging materials based on paper. This opening is in a new and expanding research organization of leading paper manufacturer, with excellent opportunity for advancement.

Send Detailed Resume of Personal Data, Experience and Education to Personnel Department:

WEST VIRGINIA PULP AND PAPER COMPANY
Mechanicville, New York
M-12

WANTED

Production Engineer. A progressive New England Mill producing coated book papers, offers a challenge to a mature man experienced in production engineering. The position will involve developing and managing of planning and scheduling of production. Applicant should have a college degree and direct experience in Production Control work. Experience in the paper industry equivalent to college will be acceptable.

Salary commensurate with training and experience. Other liberal benefits.

Address Box 56-63 care Paper Trade Journal F-27

Help Wanted

CHEMIST or CHEMICAL ENGINEER

RESEARCH SUPERVISOR to direct laboratory research group engaged in both fundamental and practical studies of pulping and bleaching methods. Related experience and advanced degree are desirable.

Location is in the mountain resort area of Virginia. The expanding research organization has established brand new laboratory facilities here to complement the company's complete experimental pulp mill. This position offers excellent opportunities for advancement in every phase of research and development.

For more detailed information, send resume to:

Harold E. Miller, Technical Director
West Virginia Pulp and Paper Company
Covington, Virginia M-12

ASSISTANT TO PLANT MANAGER

Mechanical engineering background. Should have worked with paper in packaging, paper cups, spiral or convolute containers, or in allied manufacturing. Box 56-4 care Paper Trade Journal. F-20

VICE PRESIDENT—PRODUCTION

Needed in polyethylene-extrusion lamination field. Young, rapidly growing company, growth area, mild climate. Salary open; stock option. Write giving all details of experience. Replies will be held in strictest confidence. Box 56-40, c/o Paper Trade Journal. F-27

RESEARCH PHYSICIST

B.S. degree in Physics to assist in design of new instruments and testing equipment and to evaluate preliminary models for performance and final design purposes. Age 25-35. Good salary, usual benefits. Send resume to Personnel Manager, West Virginia Pulp and Paper Co., Luke, Md. TF

PLANT ENGINEER

We are seeking a graduate engineer who can handle all phases of paper mill maintenance and engineering. We will offer the right man a good salary, a non-contributory pension plan and the usual fringes. Send resume and expected salary to Box 56-31 care Paper Trade Journal. F-20

A well known old-line Midwest concern is now expanding in all phases of its industry and is desirous of obtaining a paper coatings and saturating chemist. This man must have a B.S. degree or higher. He must also be very familiar with the equipment used in this process.

If your background lies along the above lines, please send a complete resumé, also your salary requirements in first letter. F-20

Address Box 56-49 care Paper Trade Journal.

WANTED—Assistant Paper Mill Superintendent for Midwestern Mill manufacturing light weight Kraft specialties. Fourdrinier experience essential. Cylinder experience desirable. Address Box 56-47 care Paper Trade Journal. F-20

FOR SALE

PRINTING PRESSES

1—52" Wide 4 Color Manton Oil Ink Press.
1—40" 4-color Hudson-Sharp Flexographic, with Variable Sheeter.
1—36"x66" 4-Color Meisel Oil Ink Rotary.
1—36" 2-Color Manhassett. Roll to Roll with Slitting Attachment.
1—30" 4-Color Kidder Celloprinter.
1—30" 4-color Paper Converting Machine Co.'s Roll to Roll Oil Ink Press.
1—30" 4-Color Cottrell Interchangeable Cylinder Oil Ink Press.
1—26" 3-Color Potdevin Flexo Tailprinter
1—22" 2 Color Potdevin Roll to Roll Flexographic Tailprinter.
1—#3—1 Color Keese Perfect Seal Press.
2—40" Web, 34" Print 3-Color Flexographic. Roll to Roll.

POWER PAPER CUTTERS

19—Seybolds—1-56" Precision, 56" & 84" 12Z; 44", 50" & 74" 10Z; 44", 50", 56", 64" & 84" Daytons; 44" & 74" 20th Century; 34", 38", 44" & 75" Holyokes. 36" Model 2X; 2Y 34" late type Model CHB. 4 Oswegos—44", 50", 57" & 68". 3—Sheridans—36", 40" & 65".

CAMACHINES

1—162" Type 19.
1—72" Type 10-10.
1—72" & 1 62" Type 10-5.
1—62" Type 10-84.
1—62" Type 40 1AF.
1—62" Type 8-10.
1—62" Type 26-7AM.
1—52" Type 10-6.
1—52" Type 26-3A.
1—42" Type 9-5-A.
1—42" & 62" Type 6.
1—42" Type 10-5A, 30" rewind.
1—42" & 1—52" Type 24-2A.
1—42" Type 40-5D (Roll Doctor).
1—40" Type 40.

OTHER SLITTERS

1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—30" Model B Fales-Shear-Cut.
1—48" Inman.
1—40" Type "A" Langston Shear-Cut.
1—36", & 1—40" Kidder SL Model.
1—30" & 1—40" Beck Razor Blad Slitter.
1—40" Kidder SH Model—40" rewind.
1—50" Meisel Series O-P Shear-cut.

MISCELLANEOUS MACHINES

1—40" Waldron Knife Coater.
1—48" & 1—60" Hudson Sharp Waxing Machine. Type AW2.
1—52" Waxer & Laminator.
1—64" Sheet Paraffining Machine.
1—72" Mayer Equalizer Type Waxing & Laminating Machine.
1—75" Squeeze Roll Waxing Machine.
1—Langston Tube Winder Equipment.
1—66" Paper Converting Machine Co. Household Roll Machine.
1—18" & 1—24" Schultz Automatic Roll Machine.
7—Die Presses 1—50" x 22" & 1—44" x 22" Sheridan, 1—38" x 24" Type UA — 2—17" x 42" Seybolds.
1—37" x 24 Kidder.
5—Waldron Embossers, 1—27", 1—32", 1—40", 1—44" heavy duty & 52".
7—Embossers, 1—26", 1—30", 3—60", 1—72" & 1—81"
1—30" Sheet Fed Cardboard Embosser.
2—Goins Garment Bag Machines.
1—2 oz & 1—½# to 1# Cellophane Bag Machines.
2—Paper Converting Machine Co.'s ¼ Fold Napkin Machines. 1—2 web.
1—Hudson-Sharp 13½" x 13½" ¼-Fold Napkin Machine.
2—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines.
1—48", 67", 72", 76" and 100" Hamblet Single Rotary Sheeters with backstands and layboys.
1—48" Moore & White Sheeter, 52" Knife with Layboy & Overlapping Delivery.
1—80" Hamblet Duplex Rotary Sheeter with backstands & layboy.
1—90" Moore & White Slagle Rotary Sheeter with backstands.
1—Dreissig German D-6 Bronzer.

PAPER AND PULP MILL MACHINERY

1—60" Holyoke 10 Roll Stack of Super Calenders.
1—54" Holyoke, 7-Roll Stack of Super Calenders.
1—21½" & 140" Millspaugh Suction Press Roll.
3—Nash Vacuum Pumps, L-5, L-6 and L-7.
5—3 Pocket Grinders Stones, 26" & 27"x54".
1—Sutherland Right Hand 42" Disc Refiner.

GIBBS-BROWER CO., INC.

Please address reply to Room 902
10 Depot Plaza, White Plains, New York
Telephone—ROckwell 1-1130 F-20

BOWATERS SOUTHERN PAPER CORPORATION

South's largest newsprint manufacturer has positions available in following Engineering fields:

• Electrical • Civil • Mechanical • Also Draftsmen

Engineering staff being enlarged because of extensive expansion program. Openings for experienced and recent graduates for office and field work. Duties include cost estimating, design layout, studies of operational problems, field supervision, etc. Starting salary based on qualifications with periodic merit increases. Complete insurance, retirement, and vacation programs established. Mills are located in the heart of the Tennessee Valley and are near established communities, offering excellent residential and recreational facilities. All replies will be treated in confidence. Qualified applicants will be interviewed locally by Company representatives or will visit our offices at Company expense. Reply immediately submitting summary of experience to:

Industrial Relations Department TF

BOWATERS SOUTHERN PAPER CORPORATION

CALHOUN, TENNESSEE

IF—

You Are a Mill Superintendent Between The Ages of 35 and 50

With a Technical Education and Ten Years of Modern Paperboard Manufacturing Experience

Who Wants Opportunity Unlimited in the South.
Send Full Particulars To Box 56-39,
Paper Trade Journal.

(Your reply will be kept confidential until you say "Go ahead and investigate")

Address Box 56-39
Care Paper Trade Journal

F-27

CHIEF POWER ENGINEER

Must be qualified to supervise about 20 men on all problems related to electrical distribution and power plant equipment for a corrugated board paper pulp mill. Location: Midwest. B.S. E.E. and/or equivalent in experience. CONFIDENTIAL, NO OBLIGATION. State acceptable starting salary. A top opportunity. Send detailed resume to C. R. Logsdon Co., Personnel Consultants to Paper Industry, 19 W. Jackson Blvd., Chicago 4, Ill. Refer to position number J-8917. F-20

ENGINEERS FOR FLORIDA PLANT

If you are a young mechanical, civil, chemical or industrial engineer, permanent openings are now available in this manufacturer's Fernandina Beach Division. Opportunities are excellent in this technical and dynamic branch of the pulping industry. Living conditions are ideal in a year-'round out-of-door climate. Community located on finest east-coast beach, less than two miles from plant. Fishing, hunting, boating and swimming unsurpassed. New recreational center, schools, and golf course under construction. Thirty-five miles from large metropolitan city. A truly unique working-living combination. Mail resume and salary requirements to:

Personnel Manager
Rayonier Incorporated
Fernandina Beach, Florida

F-20

TOUR BOSS WANTED

If you are a tour boss or an experienced machine tender with ability and ambition to be a tour boss we have an opening. Progressive two machine board mill in Eastern Pennsylvania. Manufacturing set-up and folding boxboards and specialties. Steady employment. If available, write Box 56-56, Paper Trade Journal, giving experience and age. M-5

RARE OPPORTUNITY

For chemist or chemical engineer with growing New England lightweight mill. Prefer knowledge secondary fibers. Must be aggressive, self-starter. Ability work with people. Resume please. Box 56-62 care Paper Trade Journal. F-27

WANTED

Assistant Paper Mill Superintendent for a specialty Fourdrinier mill in the East. Excellent opportunity for right man. Please give all facts as to education, previous experience, age, family status, etc., in first letter. All information will be kept in strict confidence. Address, Box 56-43 care Paper Trade Journal. F-20

FOR SALE

BARKING DRUM
1—10′ x 30′.

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs, with motors.
Write us regarding your requirements.

BREAKER STACK
1—110″ face 2 roll breaker stack, with frames.

CALENDER STACKS
1—3 roll 30″ face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 Roll 84″ Calendar Stock.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 Roll 86″. (Heavy Duty)
1—5 Roll 90″.
1—9 Roll—86″ face, Super Calender Stack.

CHIPPERS
1—96″ Murray 6 knife chipper, complete with 300 H.P. synchronous motor.
1—96″ Murray 4 knife Chipper—anti-friction bearings.

CLASSIFINER
1—Dilts Classifiner, practically new, with motor.

CORE MACHINE
1—M. D. Knowlton tube winder, 94″ face.

CREPER AND WAXER
1—80″ Creeper and Waxer, excellent condition, details on request.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.

CYLINDER MOLDS
2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
2—36″ diameter x 54″ face.
1—36″ diameter x 84″ face.
2—36″ diameter x 86″ face, with vats.
2—36″ diameter x 110″ face.
3—36″ diameter x 90″ face, 18″ diameter couch rolls.

DIGESTERS
2—14′ Globe Rotary Digesters.

DRIVES
1—Jones 21 H. P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
1—Vaughn 100 h.p. enclosed angle drive. Ratio 7 to 1.
2—Cleveland agitator drives, for chests.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 h.p.).
1—#4 Reeves Drive, totally enclosed, Class E, with 25 h.p. splash proof motor.
1—#6 Reeves Drive, Class E, upright, anti friction bearings (like new throughout).

DRYERS
5—24″ diameter x 54″ face, with bearings.
1—28″ diameter x 48″ face.
5—28″ diameter x 80″ face with anti-friction bearings.
3—36″ diameter x 115″ face, with gears & bearings.
6—36″ diameter x 44″ face with frames gears & bearings.
6—36″ diameter x 66″ face.
1—36″ diameter x 67″ face.
15—36″ diameter x 72″ face.
6—36″ diameter x 76″ face.
2—Dryers 36″ diameter x 84″ face, with bearings gears & frames.
2—36″ diameter x 80″ face.
1—36″ diameter x 90″ face.
1—48″ diameter x 84″ face, bearings.
1—48″ diameter x 100″ face.
1—48″ diameter x 106″ face.
2—Dryers 48″ diameter x 134″ face.
1—48″ diameter x 144″ face.
1—62″ diameter x 67¾″ face, bearings & gears.
3—60″ diameter x 86″ face.
4—48″ diameter x 50″ face, bearings.

DYNOFINER
"Rice Barton," details on request.

EMBOSSING CALENDERS
1—45″ Meadows 2 roll embosser.
1—32″ Cavagnaro 2 roll embosser.
Write us regarding your requirements.

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face. with rubber couch roll.
1—Rice Barton & Fales Extractor Roll, 26″ diameter x 104″ face, with rubber couch roll.

FELT CONDITIONER
1—160″ Vickery, brand new, complete.

FLAT SCREENS
2—14 plate Packer, roller shoes.

GEARS
Write us regarding your requirements.

GRINDERS
2—4 pocket Grinders.
2—3 pocket Grinders.

JORDANS
1—#4 Emerson Jordan, anti-friction bearing.

LABORATORY EQUIPMENT
1—Marcy Rod Mill.
Write us regarding your requirements.

LAMINATING MACHINE
1—72″ Hudson-Sharp laminating machine. reverse coater.
2—26″ Polyethylene laminators.
2—84″ Asphalt laminators.
1—72″ Beloit Laminator, complete with drive.

MOTORS
1—50 H.P. Upright motors, air cooled 3/60/440, 1150 R.P.M. (Ball Bearing).
Write us regarding your requirements.

PRESSES
Write us regarding your requirements.

PRESS ROLLS
1—Chilled iron, chrome plated, 12″ x 100″
1—Chilled iron, chrome plated, 10″ x 74″

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—Jones Pulper.

PUMPS
1—Shartle Bros. Agiflow circulating pump, 2000 g.p.m., 62 ft. head.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTERS
Write us regarding your requirements.

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty
1—123″—3 bowl revolving reel.
1—134″—2 drum.
1—72″ Dowingtown Reel, 2 bowl.

REFINER
1—12″ Wiener Refiner.

ROLLS
1—Rubber Couch Roll—20″ diameter x 108″ face.
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#1A Bird, copper vat.
Write us regarding your requirements.

SAVEALLS
2—Sandy Hill, 36″ diameter x 86″ face cylinder molds, anti-friction bearings and couch rolls.

SCREEN PLATES
Bird Rotary screen plates.
Plates (new) for flat screens.
Write us regarding your requirements.

SCREENS
2—Bird Machine Company Jonsson Screens.

SHAKE
1—Bevis Fourdrinier Shake.

SHEETERS
1—42″ Finlay Sheeter.
1—85″ Maxson Sheeter (duplex) layboy, 11 rollback stand.
1—140″ Hamblet (Simplex).
1—140″ Hamblet (Duplex).
1—100″ Hamblet Sheeter (Duplex) with layboy, backstand, etc.

SHOWERS
5—Bird showers 96″ face.

SLITTERS & WINDERS
1—40″ Fales Slitter.
1—42″ Cameron type 24-3A.
1—42″ Cameron—Type 6.
1—42″ Cameron—Type 9.
1—50″ Cameron—Type 6.
2—52″ Cameron—Type 10.
2—60″ Kidder.
1—62″ Cameron—Type 6.
1—62″ Cameron (duplex)
1—72″ Cameron—Type 10.
2—86″ Two Drum Moore & White, 50″ diameter rewind.
1—120″ Moore & White, 4 drum winder.
1—157″ Cameron—Type 18.
1—169″ Bagley & Sewall, 2 drum, shear cut, 60″ diameter rewind.

SLITTING DEVICE
84″—Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new).

STOCK PUMPS
1—8 x 18 Shartle Triplex.
2—10 x 10 Beloit Duplex, low type.
2—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.
1—20″ x 20″ centrifugal Shartle, 12,000 G.P.M. (new)
Advise as to your requirements.

SUCTION BOXES
Write us concerning your requirements.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only. 127¼″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face. SKF bearings.
1—Downingtown suction couch roll, complete (new) 127½″ face x 26″ diameter.
1—Sandusky Suction Couch Roll 18″ diameter x 98″ face.

SUCTION FELT ROLL
1—Gilbert & Nash 122″ face.

SUCTION PRESS ROLLS
1—Sandusky Suction Press Roll 130″ drilled face x 14⅞″ diameter.
1—Downingtown Rubber Covered Suction Press Roll, complete (new) 125½″ face x 24″ diameter.

SUCTION PRESS SHELL
1—Beloit rubber covered suction press shell 19¼″ diameter x 100″ drilled face.
1—Downingtown rubber covered suction press shell only, 125½″ face x 24″ diameter.

SUPERCALENDER STACKS
1—10 Roll 60″ Holyoke.

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face. Write us regarding your requirements.

THICKENERS
1—All cast iron vat, 115″ face cylinder mold, anti friction bearings, 18″ couch roll—very good condition.
1—42″ diameter x 146″ face, cylinder mold, iron end vats, with 18″ diameter couch roll complete with drive.
Write us regarding your requirements.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder).

TRIMMERS
1—63″ Oswego cutter.
1—60″ Guillotine cutter.
1—44″ Seybold.
1—64″ Seybold cutter.

VACUUM PUMPS
2—L-6 Nash vacuum pumps
2—L-5 Nash vacuum pumps
1—L-4 Nash vacuum pump
1—L-3 Nash vacuum pump
2—#1 Nash Hytor vacuum pumps
2—#2 Nash Hytor vacuum pumps
1—#3 Nash Hytor vacuum pump
2—#4 Nash Hytor vacuum pump

VALVES
8—10″ 3 way DeZurik Dump Valves.
6—12″ 3 way DeZurik Dump Valves.

VATS
2—D. J. Murray Company Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

VIBRATING SCREEN
1—Tyler Niagara Vibrating Screen, practically new.

WET MACHINE
1—72″ Wet Machine.

YANKEE DRYERS
1—84″ diameter x 56″ face.
2—108″ diameter x 72″ face.

Paddy Ross, Pres. — Ben Kurs, Treas.

J. J. ROSS COMPANY

377 Frelinghuysen Ave.* — Tel.—Bigelow 3-3720 — Newark 5, N. J.

Help Wanted

PAPER CONVERTER QUALITY CONTROL DIRECTOR. Familiarity and experience in use statistical techniques for introduction in three separate plants headquarters mid Massachusetts. Expansion to overall operations research program contemplated. Contact with resume through Donald Macaulay, Paper Quality Control Inc., Chappaqua, New York. F-20

SALESMAN—NEW YORK

Large manufacturer of specialty papers has opening for a salesman in New York territory. One with specific experience in the sale of paper for protective packaging preferred. Salary commensurates with experience, plus bonus. Please forward resume of experience, education, training, and salary requirements to Box 56-48 c/o Paper Trade Journal. F-20

MAINTENANCE MAN—good all around, able to do machine shop and electrical work for paper converting plant. Write to: Newark Paraffine & Parchment Paper Co., 50 Jelliff Avenue, Newark, N. J. TF

WANTED—TOUR BOSS for night work on Fourdrinier Board Specialties. Metropolitan New York Area. All benefits. Send resume and salary expected first letter to Box 55-329 care Paper Trade Journal. TF

WANTED — Machine Tender in Northern New England on tissue grades. Advise age and experience. Address Box 56-51 care Paper Trade Journal. F-20

WANTED—Tour Foreman—For night work. North Jersey Fourdrinier Board Mill—Nine point and specialties. Address Box 56-45 care Paper Trade Journal. F-20

Situations Wanted

BOARD SUPERINTENDENT

Twenty-eight years of practical experience in manufacturing high grade folding boxboard, frozen food cartons on seven and eight cylinders from bleached sulphite, sulphate, old paper stock. Aggressive man, excellent references, good health. Address box 56-41 care The Paper Trade Journal. F-27

SALESMAN

Self-Starter

Proven Sales Record. 5 years production experience as asst. Supt.—B.S. (Chem. Eng.) Immediately available also for Technical Sales-Service Work. Reply Box 56-54 Paper Trade Journal. F-20

Finishing and Shipping Supt.

Desires change. Particularly qualified for bleached container board grades. Good labor relations and well qualified in traffic and shipping problems. Well acquainted with most converting problems in the folding grades. Address Box 56-46 c/o Paper Trade Journal. TF

EXPERIENCED PAPER MAKER—machines and beaters on book, writing, offset and industrials, wants position as Asst. Super or Tour Boss. Available promptly. Excellent references. Address Box 56-60 care Paper Trade Journal. F-27

Buy U.S. Savings Bonds

Situations Wanted

DRY CREPE SPECIALIST

30 years practical experience, the latter eleven successfully making 13½# at 1950 F.P.M. Can get you started or solve your problems. Presently employed, available on two weeks notice. References. Address Box 56-58 care Paper Trade Journal. F-20

FINISHING SUPERINTENDENT

Excellent background; 15 years experience. Seeks progressive organization, needing man with outstanding ability; all phases of specialty finishing, organization, expansion and labor relations. Currently employed. Address Box 56-57 care Paper Trade Journal. F-27

MECHANICAL ENGINEER

Over 30 years experience in pulp, paper and board mills in Production, Engineering and Maintenance. Kraft, sulphite and Semi-Chem. pulping. Management and Supervisory positions. Invites correspondence on special or permanent assignments. Address Box 56-59 care Paper Trade Journal. M-19

PRODUCTION EXECUTIVE—Conversion of papers and boards, seeks progressive organization needing man with outstanding ability in all phases of manufacturing; organization; expansion and labor relations. Allied lines. Currently employed. Address Box 56-5 care Paper Trade Journal. F-27

POSITION WANTED as Manager of Plant Superintendent of a multi wall bag plant. 17 years experience in bag developing and research, maintenance, customer service and superintendent of a multi wall plant including the following equipment: St. Regis Tuber, Potdevin 62, Schmutz Press, Coty Tuber and bottomer, Weber SOS and Potdevin SOS. Address Box 56-50 care Paper Trade Journal. F-20

For Sale

FOR SALE

2—Size 24 Blaw-Knox Pulpwood Grapples—like new—excellent condition. Being offered at far below present cost.

1—Jones #31 Repulper complete with reduction gear and 60 H.P. motor.

2—Crane Scales, 22,000 pounds capacity, Fairbanks-Morse, excellent condition.

2—Blaw-Clawson wet lap machines, one 72" and one 96". Completely reworked and like new.

Address inquiries to:
Purchasing Department

The Champion Paper and Fibre Co.
P. O. Box 872
Pasadena, Texas M-12

350 H.P. MOTOR FOR SALE

New Elliott (Crocker-Wheeler Motor) 440 volts, 60 cycle, 3 phase, 1600 R.P.M. Slip Ring. On original skid. Never used. Larger motor substituted.

Thomas W. Hall Co., Stamford, Conn. TF

For Sale

FOR SALE — PHOENIX, N. Y.

TISSUE AND TOWELING PAPER MILL

Production 15,000 lbs. Tissue or 20,000 lbs. Toweling. Brick and concrete sprinklered buildings — 25,000 square feet on river with two water wheels, 250 h.p. each with generators.

Excellent skilled labor available.

90" Bagley & Sewall single cylinder machine complete including enclosed drives and main motor drive.

Machine including stock preparation equipment erected and ready to run.

READY FOR IMMEDIATE START UP.

ROSS PAPER MACHINERY COMPANY
265 Passaic St. Newark, N. J.
Tel. HUmboldt 2-2177 TF

FOR SALE

72" Hamblet Sheeter, Layboy & Backstand.
96" Moore & White Sheeter, 8-roll Backstand and Layboy.
36" Waldron 2-Drum Rewinder.
50" Cameron Type 6 Slitter.
48" Kidder Slitter, two rewind shafts.
48" Maxson Layboy and Sheet Counter.
62" Moore & White Layboy.
57" Dexter Power Cutter.
20 New Fast Flexible Couplings for 2", 2½" & 3½" shafts.

Thomas W. Hall Co.
Stamford, Conn. TF

BOILER FEED PUMPS

STEAM TURBINE DRIVEN

GPM	TFH	STAGE	MFG.
450	892	4	Worth. (2)
500	850	4	Worth.
200	1375	6	Ingersoll R.(2)
200	850	2	Weinman (2)
190	1320	4	De Laval
750	725	4	Worth. (2)

MOTOR DRIVEN

GPM	TFH	STAGE	MFG.
740	2250	5	Worth.
700	1550	6	Worth.
675	1100	5	LeCourtenay
500	1050	5	Worth. (3)
100	1150	5	Gould

UNDERWRITERS FIRE PUMPS

GPM	TFH	STAGE	MFG.
1500	231 (motor driven)	1	Fairbanks
750	231 (gas. driven)		Allis Chal.(2)

MOTOR DRIVEN SAND PUMPS

American Manganese ..... 10"
Allen-Shaffer-Hoff ..... 14"

NASH HYTOR COMPRESSORS

4—size #2, 850 R.P.M., 10# pressure, 240 C.F.M.; 860 R.P.M., 180 C.F.M., when used as a Vacuum pump.

2—2800 Gal. cap. 100# steam press. hot water storage heaters, mfg. by Quaker City Iron Works. Good shape.

This is only a partial listing of pumps carried in stock. We have hundreds of other pumps, compressors, and power equipment. Don't ask us what we have, write and tell us what you want.

PHILADELPHIA TRANSFORMER CO.
Box 566 Dalton, Pa.
F-27

FOR SALE—50" & 60" Shear-cut Slitters & Rewinders; No. 6 brightwood; 26 x 38 Thomson Diecutter; SET-UP & FOLDING BOX MACHINES. Address Box 56-29 care Paper Trade Journal. TF

ROSS PAPER MACHINERY COMPANY

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USED PAPER MAKING & CONVERTING MACHINERY

Humboldt 2-2177

IMMEDIATE DELIVERY FROM AMERICA'S LARGEST INVENTORY OF PAPER MACHINERY

BALERS

1—Buffalo Baling Press—upstroke.

BEATERS

1—Dilts high speed iron tub. Roll 62" dia. x 54" face with 75 HP motor & controls.
1—E. D. Jones "Bertram" 1500 lbs. Roll 72" x 63". C. I. Tub. Complete with Foxboro Air Cylinder Control and washer. Driven by 3 h.p. gear head motor. Used 2 years.

CYLINDER MOULDS

3—136" face x 54" diameter—stainless steel covering—with 2 iron end vats.

CALENDER ROLLS

46—Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS

1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Black Clawson 82" 3 roll with doctors.
1—Black Clawson 82" 5 roll with doctors.
1—Farrel Birmingham 124"—9 roll stack—water cooled bearings.
1—Sandy Hill 84" 7 roll, with doctors.

DRIVES

3—Reeves #2F, #3 and #6.
3—Hamilton Parallel enclosed Drives; 1—60 h.p.; 1—100 h.p. and 1—125 h.p.

DRYERS

7—43" face & 36" dia.—frames, gears & bearings.
4—52" face x 48" diameter—gears & bearings.
1—52" face x 24" diameter—gears and bearings.
17—84" face x 36" diameter, with gears.
1—88" face x 36" diameter.
1—104" face x 36" diameter.
1—104" face x 48" diameter.
10—109" face x 42" diameter.
1—110" face x 42" diameter, with bearings.
1—116" face x 36" diameter.
1—116" face x 48" diameter.
6—120" face x 48" diameter with gears, bearings and felt rolls.
1—124" face x 48" diameter.
1—126" face x 48" diameter.
13—127" face x 42" diameter.
1—130" face x 48" diameter.
9—160" face x 36" diameter, gears & bearings.
44—160" face x 48" diameter. Complete dryer section including felt dryers, felt rolls, etc.
36—132" face x 42" diameter with gears, bearings and frames.
18—58" face x 36" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
64—46" face x 24" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
24—46" face x 48" diameter. Complete with gears, bearings, steam joints and felt equipment.

FLAT SCREENS

3—8 plate Sandy Hill roller shoe with scrapers.
2—8 plate Bagley & Sewall with scrapers.
2—12 plate Sandy Hill, anti friction bearings.
5—12 plate Impco, Dunbar Drive, Witham Fasteners, C. I. Vats and scrapers.

JORDANS

1—E. D. Jones pony Jordans 3/16" stainless steel fillings.
1—E. D. Jones Pony Jordan, ball bearing, with stainless steel filling.
1—Smith & Winchester standard with granite filling.
1—Noble & Wood Bull Dog Jordan. Anti friction bearings with coupling and motor base.
1—Appleton #2—anti friction bearings.
2—E. D. Jones Standard Jordans—anti friction bearings.

KNIFE GRINDERS

1—132" Rogers with motor. Used 5 months.
1—130" Hanchett belt driven complete with coolant pump, and 2 spare wheels.
1—92" Seybold with motor.

LABORATORY EQUIPMENT

1—5 lb. Wood Tub Beater—Complete.
1—Biggs 6' diameter Rotary Digester 100# pressure.

MOTORS

12—125 H.P. Westinghouse synchronous enclosed. Brand new. 440 volt, 720 rpm forced air ventilation with starters.
1—Westinghouse 300 h.p., 388 r.p.m., 440 v., 3 phase, 60 cycle.

PASTING MACHINE

1—Hudson Sharp 72"—3 roll Paste Applicator with Link Belt Reducer and 25 h.p. motor. (New 1946).

PULP EQUIPMENT

3—2 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—3 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—Lannoye Pulper—enclosed drive and 30 h.p. motor.

PULP PRESSES

1—Hydraulic Machine Co. 250 tons 30" x 36" platen, 48" daylight, 30" stroke, 16" ram —upstroke. For baling dry pulp.

PUMPS

44—Centrifugal Pumps open & closed impellers.

REELS

1—Pusey & Jones 162" drum reel.
1—Downingtown 104" 2 bowl reel.
1—84" Pope Reel.

REFINERS

1—Dilts Hydrafiner.
2—34" Sutherland Disc Refiner, stainless steel discs. 1—left hand and 1—right hand.

ROLL GRINDERS

1—Lobdell Model 3MB for 30" diameter rolls —19 ft. 6" bed. Complete with crowning device and 15 h.p. main motor drive and 2 10 h.p. motor grinder wheel drives.

ROLLS—PRESS, COUCH, etc.

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS

1—#2 Bird—Copper vat.
2—Bird #3A—Monel Vats.
5—Bird #2A with copper vats.
1—Bird #3A—copper vat—2 motors.

SHEETERS

1—Cameron 124" quick change double slitter assembly for board sheeters. Complete with 16 pneumatic slitters.
1—Moore & White simplex 114" sheeter with Maxson Layboy, overlapping delivery, 8 roll backstand motor and starter.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 81" duplex with Erie Layboy 12 roll backstand and motor.
1—Hamblet 75" with layboy and backstands.
2—Hamblet 110" single knife sheeters.
1—Beck 45" sheeter.
1—Beck 48" with jogger.
1—Hamblet 55" with 3 roll backstand.

SHREDDERS

2—Mitts & Merrill Air Fluff Paper Shredder. Used 9 months.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders, Style 36.

SLITTERS AND WINDERS

1—Dietz 81" Parent roll backstand—with automatic tensioning device.
1—Cameron 42" Model 6.
2—Cameron 165" Model 18—Complete with motor drive and roll ejector.
1—Cameron 194" Model 19. Anti-friction bearings, 2800 f.p.m., equipped with air operated quick change, constant tension and roll ejector.
1—Moore & White 66"—two drum.
3—Essex 42" center wind—30" duplex rewind. Anti friction bearing equipped.
1—Cameron 42" Model 9-S.
1—Cameron 62" Model 6. V Belt Driven by 7½ h.p. variable speed motor with controls.
1—Cameron 62"—Model 6.
1—Schultz 18"—Automatic with motor.

STOCK PUMPS

1—Shartle 10 x 20 single plunger pump.
1—Moore & White 10 x 16 Triplex.
1—Beloit 8 x 10 Triplex.
1—Downingtown 8 x 18 triplex, with enclosed drives and motor.

SUCTION COUCH ROLLS

2—Beloit 25" diameter x 114" face, anti friction bearings, with stands. Direct drive.
1—Sandusky suction couch 25" diameter x 122" drilled face.
1—Sandusky suction couch 18" diameter x 122" drilled face.
1—Sandusky 28" diameter x 162" drilled face complete Trunnion Roller Bearing.
1—Sandusky 22" diameter x 135" drilled face trunnion roller bearings.
1—Sandusky 18" diameter x 116" drilled face.

SUCTION PRESS ROLLS

1—Beloit 113" drilled face x 22" diameter—anti friction bearings.

SUPERCALENDERS

1—Norwood 30" 5 roll, complete with motor drive.
1—Norwood 100" 9 roll, complete.
1—Norwood 134" 8 roll, complete.

TISSUE AND TOWELING MACHINE

1—B & S 90" single cylinder machine. Complete including pumps, piping, valves, enclosed drive and VS motor drive. Full details on request.

TRIMMERS POWER BACK GAUGES

1—Seybold 94" Model 15 ZJ.
1—Seybold 64" Model 12-Z.
1—Seybold 56" Dayton—10 knives.
1—Seybold 84" Dayton with motor and spare knives.
1—Seybold 72" Dayton.

VACUUM PUMPS

1—Nash H-3 with 5 h.p. motor.
2—Nash H-4.
1—Nash L-3 with totally enclosed 5 h.p. motor.

VOITH INLETS

1—New Valley Iron Works 156" x 36" monel lined inlet and head box.
2—Valley Iron Voith Inlets, adjustable 83" to 86"—Brass lip, stainless steel apron.
1—Valley Iron Works—for 113" wire.
1—Valley Iron Works 151" stainless steel inlet and head box.
1—Bagley & Sewall 144" stainless steel clad high speed inlet and headbox.

VORTRAPS

7—Nichols 4" stainless steel Vortraps—rubber lined heads.

WET MACHINES

1—Rogers 72" x 48" Wet Machine. Double press sections.

YANKEE DRYERS

1—10 ft. diameter x 132" face with bearings
1—Beloit 12 ft. diameter x 140" face—75 lb. steam pressure.

For Sale

BLEEDER TYPE TURBO GENERATORS

2—W.H. turbines, throttle press. 340# P.S.I.G., Bleeder Station 110# P.S.I.G. Exh. 30# P.S.I.G. Satu. Steam. Ser. Nos. 12750 & 12751.

W.H. AC gens., 1563 K.V.A., 480 V., 1880 amps, 60 cycle, 3600 R.P.M., type S0-2G135, .8 P.F., 3 ph., Ser. Nos. 4953392-93.

W.H. DC exc., type SK, 16 K.W., 125 volts, 128 amps., 3600 R.P.M., frame 43, sty. No. 2G136.

Still on fndn. In exc. condition
Price and further inf. on request

PHILADELPHIA TRANSFORMER CO.
Box 566 Dalton, Pa.
F-27

For Sale

Paper Machines For Sale

1—84" Fourdrinier Machine complete, designed for 15 tons per day. Can be inspected on original foundations.

1—54" Three-Cylinder Paper Machine, 2 Presses, 13 Dryers, 36" diameter, Calender Stack, Reel, Winder, Variable Speed Drive, Pump, etc. fully assembled.

1—74" Fourdrinier Machine, Suction Press, drying capacity for 40 tons per day, Calender Stack, Cameron Winder, Drive, etc.

Osborne Paper Mill Equipment Corp.
Fulton, New York Tel. 2-4254
F-27

Wanted

WANTED TO BUY:

Used shear type slitter-rewinder. Size 60" minimum to 72" maximum. Rochester Paper Company, Rochester, Michigan.
TF

For Sale

FOR IMMEDIATE SALE
BRAND NEW
FACIAL TISSUE FOLDER

No. 28-F Hudson-Sharp Facial Tissue Folder for cutting and folding facial tissues 8" in width and 9½" in length to produce C-fold 4½" wide.

Machine equipped with roll stands for processing five rolls 8" wide or single roll 40" wide. Furnished with large type collapsing reel unit and cutting table. Also equipped with 1 HP 220-440-volt, 50-cycle, 3-phase Reliance motor for cutting table, as well as Productimeter counter for Folder.

Machine available for immediate delivery and quoted subject to prior sale. Write or call

HUDSON SHARP MACHINE CO.
GREEN BAY, WIS.
F-20

YOUR GUARANTEED CASH MARKET FOR SURPLUS MACHINERY
WITH IMMEDIATE REMOVAL FROM YOUR MILL

ROSS PAPER MACHINERY COMPANY
265 Passaic Street, Newark 4, New Jersey
F-27

COATING RODS FOR SALE
EQUALIZER RODS, DOCTOR RODS
METERING RODS

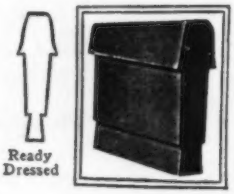
Various rod diameters wound. All sizes of Music wire and stainless wire stocked. Wire is spring tempered for longer life and to control weight of finished product.

DeNeve & Consler Co. 8 Boston St. Rochester 21, N.Y.
F-20

READY DRESSED

MILL COGS

LABOR SAVING TIME SAVING



The most economical filling that can be put in a mortise wheel

QUICK SERVICE
ON ALL SIZES

Write for Instruction Sheet "C" which is free

THE N. P. BOWSHER CO.
SOUTH BEND, IND.
F-6

Wanted

WANTED TO BUY—Good used #2 Miami Jordan or equivalent, with anti-friction bearings, motor and motor control. Address Box 56-61 care Paper Trade Journal. F-20

WANTED

Job Lots of Paper & Paperboard

We need a substantial supply of odd lots, side rolls, obsolete, surplus, or damaged lots of paper. Will buy all grades, any quantity. MELROSE PAPER CO., INC., 208 Walnut St., Philadelphia 6, Pa. Market 7-0800. TF

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New Improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester 11, N. Y. TF

Opportunity

ATTENTION SUPERINTENDENTS & CHEMISTS. If you have an idea on a chemical product for the paper industry or outlet existing products we will duplicate, develop, finance, mfg. & market. Confidential. Write Box 56-14, Paper Trade Journal. F-20

WANTED

One 83 Potdevin SOS Grocery Bag Machine one 102 and one 104 flat and square bag machine.

Give all particulars including price in first letter. Address Box 56-34 care of Paper Trade Journal.
TF

FOR SALE

200,000 acres PINE TIMBERLAND in FLORIDA with excellent facilities for NEWSPRINT or KRAFT MILL.

Unique opportunity. Write:
TECHNOPULP, INC., Upper Montclair, N. J.
F-20

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BUSINESS STAFF

Arthur E. Gordon, Business Mgr.

Frederick B. Grosse, Production Mgr.

Francis J. Gordon
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

George Heitzeberg
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

H. K. Vinton
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LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391
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HOUSTON 6, TEXAS: Room 214, 3217 Montrose Blvd. JAckson 9-6711
Dallas, 6, Texas: 5526 Dyer Street

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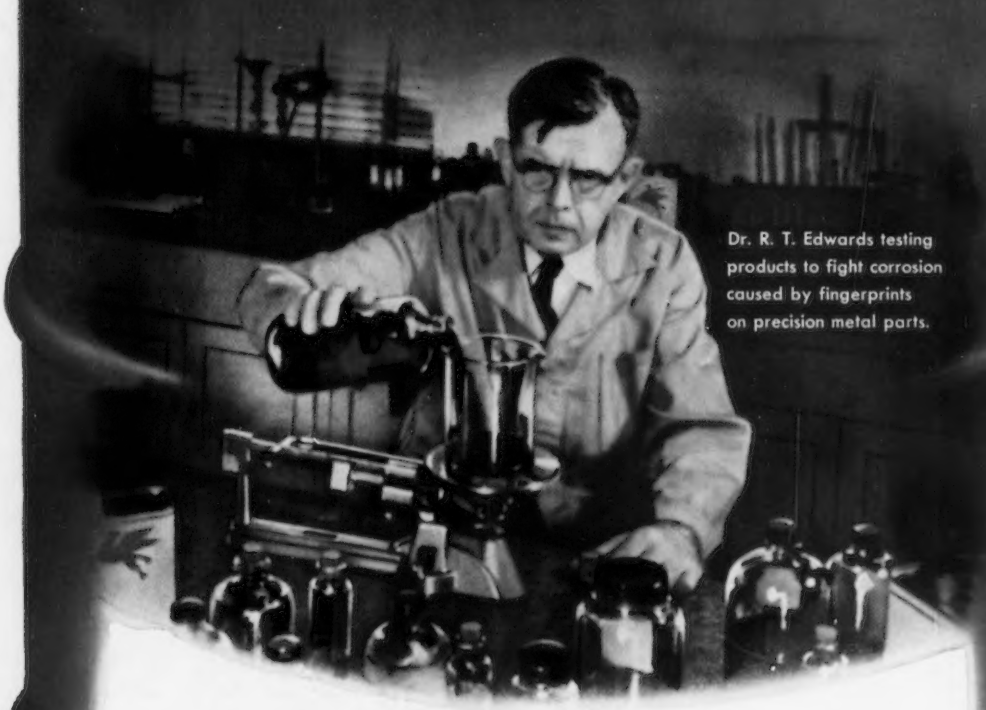

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